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Growth Through Agricultural Progress

Cover map: Food balance studies are not yet available for a few countries shown here as diet-deficit on the basis of fragmentary information.

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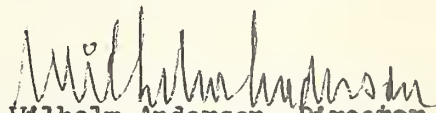
FOREWORD

Research work on the World Food Budget by country was initiated in February 1961 by the Foreign Agricultural Service of the U. S. Department of Agriculture under the sponsorship of a special task force. A preliminary report "The World Food Deficit - A First Approximation" was published by FAS in March. Early in April, in a reorganization and realignment of the Department's economic functions, primary responsibility for the World Food Budget was transferred to the Economic Research Service. This study was prepared by the ERS Regional Analysis Division with the active participation of FAS commodity and program specialists.

see att. 1, 2, 3

FAS agricultural attaches, ICA food and agriculture officers, and State Department economic officers of our missions at foreign posts reviewed pertinent sections of the manuscript and provided many useful suggestions. Detailed country data by regions are being processed separately for limited distribution.

It is planned to update all the food balance estimates for the consumption year 1961 when data become available and to extend this work, insofar as possible, to countries not previously covered. There is need to improve the quality of the data in many of the food balances, and this will be attempted in the years ahead. Food consumption surveys are planned for such countries as Brazil and Peru where sizable segments of the population are believed to have diets substantially below the average for the country.


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October 1961

HIGHLIGHTS OF THE STUDY

Food balances for the world's nations present sharp contrasts. Diets are nutritionally adequate in the 30 industrialized nations in the temperate Northern Area which account for a third of mankind--more than 900 million people. Their production of food and things they can trade for food assures their food supply, now and for the foreseeable future.

For most of the 70 less-developed countries in the semitropical and tropical Southern Area, diets are nutritionally inadequate, with shortages in proteins, fat, and calories. These countries contain over 1.9 billion people. In most of them, population is expanding rapidly, malnutrition is widespread and persistent, and there is no likelihood that the food problem soon will be solved.

Exceptions to the general situation in the Southern Area include: Taiwan in the Far East; Turkey, Lebanon, and Israel in West Asia; Republic of South Africa and Federation of Rhodesia and Nyasaland in Africa; and Argentina, Uruguay, Chile, Brazil, Costa Rica, Cuba, and Mexico in Latin America. Diets in each of these countries meet the nutritional reference standard on a national average basis. However, substantial segments of the population of some of these countries, such as northeast Brazil, are believed to have substandard diets.

Projections of production and imports in the less-developed areas for 1962 indicate that consumption will fall short of the nutritional standard by the following: animal protein equivalent to 1.5 million metric tons of nonfat dry milk; pulse protein equivalent to 150,000 tons of dry beans and peas; fat equivalent to 3 million tons of vegetable oil; and other protein and calories equivalent to 29 million tons of wheat. About the same shortages are projected for 1966.

The projected consumption levels are based on further increases in food production in the deficit areas and increased imports, including accelerated concessional purchases and grants. In 1958, for example, the Southern Area had imports of 11.7 million tons of wheat compared with 20.8 million projected for 1962 and 25.3 million for 1966. This is about as much wheat as these countries can, and are willing, to receive and move into consumption. The situation is similar for nonfat dry milk and vegetable oil.

The world food problem centers primarily in the Far East and Communist Asia where the dense and growing population is pressing increasingly on the food supply. The Far East, excluding Communist China, has two-thirds of the wheat shortage projected for 1962, and nearly one-half of the animal and pulse protein shortage. Communist China alone has about one-half of the animal protein and fat shortages, and about 3 million tons of the wheat shortage.

The following table shows each region's percentage of the total nutritional gap projected for 1962 and its percentage of projected population for the Southern Area:

Southern AreaNutritional gapPopulation

	<u>Percent</u>	<u>Percent</u>
Latin America	6.0	9.7
Africa	5.8	11.7
West Asia	3.1	3.7
Far East	60.2	42.0
Communist Asia	24.9	32.9
Total	<u>100.0</u>	<u>100.0</u>

The levels of consumption projected for Latin America, Africa, and West Asia for both 1962 and 1966 show a substantial shortage of wheat. However, consumption of animal and pulse protein projected for Latin America and West Asia is nutritionally adequate, and the fat shortage is small. Only minor shortages of the three nutrients appear in Africa.

The nutritional gap can be closed only by increased production of food and the things that can be traded for food within the diet-deficit regions. Among the immense problems faced by these regions in attaining this objective, the following three stand out:

Low income per capita. Annual per-capita income for the Southern Area as a whole in 1955-57 averaged \$95 compared with \$843 for the Northern Area. Within the Southern Area, the averages were as follows: Latin America, \$235; Africa and West Asia, \$137; Far East, less Japan, \$73; and Communist Asia, \$62. Eighty-five percent of the nutritional gap is in the Far East and Communist Asia where income is especially low.

Low purchasing power per person makes it highly unlikely that the diet-deficit regions can increase imports of foods beyond those projected. Low income reflects the high concentration of population in agriculture--especially subsistence agriculture. Further economic development, with increased urbanization and industrialization, will provide greater incentive as well as the means for farmers to expand production for commercial markets.

High ratio of population to land. The limited amount of arable land available in much of the food-deficit area intensifies the problem of increasing food production. The Far East has only 0.8 acre per person, and Communist Asia only 0.4 acre compared with 1.7 acres for the Northern Area as a whole. Arable land per capita in these areas will shrink further as the population expands.

The amount of arable land per capita is much greater in Latin America, 1.3 acres, and in Africa and West Asia combined, 2.3 acres. Furthermore, much more potentially arable land is available in these regions than is now being used. This will make possible increases in food production from expansion of the land base as well as from increases in yields.

Lack of chemical fertilizer. Domestic production of chemical fertilizer in the Southern Area in 1958 was only 0.6 kilogram per capita (plant nutrient basis) and 1.6 kilograms per hectare. This was far below the Northern Area's averages of 27.9 kilograms per capita and 40.3 kilograms per hectare. Huge investments in chemical fertilizer plants will be required in the Far East and Communist Asia before these regions can substantially expand use of fertilizer to increase yields. Similarly, large investments will be needed for irrigation works and facilities to assure effective use of plant nutrients.

THE WORLD FOOD BUDGET

1962 and 1966

WORLD ANALYSIS

This study attempts to measure the foods produced and consumed by the people of the world in 1958, and as projected for 1962 and 1966. It further assesses the adequacy of the consumption as measured against nutritional reference standards. Immense difficulties of statistical compilation and reconciliation beset this study. Many gaps in needed information were encountered for which informed estimates had to be made. The findings should be regarded as a rough first approximation of the world food budget.

In summarizing the findings and in analyzing and assessing their significance, it was found helpful to divide the world into two parts; the Southern Area which includes two-thirds of the world population and all diet-deficit countries; and the industrialized Northern Area which includes the remaining third of the population and no diet-deficit country. The Southern Area occupies the land space south of the 30th parallel, north latitude (excluding Australia and New Zealand) and includes the less-developed regions. The Northern Area lies to the north of the parallel (excluding Communist Asia and Korea) and includes the industrialized regions.

Introduction

Only in the most recent years of man's long struggle to safeguard his food supply has any large segment of the world's people escaped permanently from the fear of malnutrition and hunger. This monumental achievement has occurred over the last 20 years, and more fully in the last 10 years, for a third of the world's population -- those who live in the industrialized countries of the Northern Area.

It is true, of course, that the food supply has been reasonably adequate in the United States, Canada, Australia, and New Zealand for a much longer period, and in northwestern Europe for a somewhat shorter time. But only in recent years has the food supply of Eastern Europe and Japan been fully assured.

Note: All consumption data in this study are based upon food balances constructed for 1958 with the following exceptions: Western Europe 1957-58; the Soviet Union, most of other Eastern Europe, Australia, and New Zealand 1958-59.

In the United States, Canada, Australia, and New Zealand in the past 20 years, and in Europe and Japan since World War II, resources on an increasing scale have been allocated for research and development in industry and agriculture, and in facilities and services, including those servicing agriculture. In agriculture, this has meant greatly increased yields per acre, greater output per unit of livestock, and higher output per hour of labor, particularly in the United States. Evidences of improvement are less obvious in Eastern Europe where agricultural development has been encumbered with the reorganization of farming in most countries, many administrative problems, and over-emphasis on industrialization.

What is new and indeed monumental is that the Northern Area has assured the food supply for over 900 million people in the space of two decades. Moreover, barring destructive wars, the industrialized North now has the technology and science, facilities and services, industrial and agricultural plant, financial resources, management know-how, and, finally, the forward thrust and dynamism to assure its food supply permanently on existing resources. In addition, it has been able to lend emergency food assistance to the less-developed regions. Significantly, the Bengal famine of 1942-43 in which over a million people died of starvation was the last great famine in the Free World.

Continued assurance of a permanent food supply is dependent, of course, as in the last two momentous decades, on well-supported programs of research and development in agriculture. To assure that agricultural production in the Northern Area keeps moving ahead of population growth and that difficulties attending attempts to increase yields proportionately are overcome, it will be necessary to continue to allocate resources for research and development at accelerated rates.

The hope now is that the Northern Area's achievement, which has been the substance of man's dreams since the dawn of time and dwarfs into insignificance all achievements in outer space, may be extended rapidly to the remaining peoples of the earth, so that at the close of this century or sooner no man need lie down hungry, or see his children waste away through malnutrition.

The Northern Area possesses a highly developed industrial and agricultural plant and most of the world's highly skilled manpower and resources of scientific and technical knowledge. This is reflected in per capita income. For 1955-57, the average annual per capita income of the 900 million people in the Northern Area was estimated at \$843, ranging from \$2,070 in the United States to \$230 in Japan (see table 1). For the 1.9 billion people in the less-developed Southern Area, income averaged only \$95 per person, varying from a high of \$235 in Latin America to a low of \$62 for Communist Asia.

Figures on agricultural production from table 1 further point up the differences. In 1958, the Northern Area with 32 percent of the world's population accounted for 52 percent of the value of world agricultural production. Average per-capita value of farm production was \$94, ranging from

Table 1.--Agricultural production: Total output and comparison with population, arable land, and per-capita income, world by regions, 1958

Region	Production			Population ^{1/}		Arable land ^{2/}		Income per capita ^{3/} Dollars
	Total value	Distri- bution	Production per capita	Total	Distri- bution	Total	Distri- bution	
	Mil.dol.	Percent	Dollars	Millions	Percent	Mil.ha.	Percent	
<u>Southern Area</u>								
Latin America	15,275	9.1	79	193.1	6.7	102	7.3	235
Africa and West Asia	15,450	9.2	49	314.7	11.0	290	20.8	137
Far East, less Japan ^{5/}	23,925	14.2	31	766.0	26.7	257	18.3	73
Communist Asia	26,910	16.0	40	675.0	23.5	112	8.0	62
Total	81,560	48.5	42	1,948.8	67.9	761	54.4	95
<u>Northern Area</u>								
Western Europe	26,275	15.7	86	303.8	10.6	97	6.9	657
Eastern Europe ^{6/}	23,900	14.2	74	322.8	11.2	277	19.9	474
United States	26,475	15.8	152	174.2	6.1	188	13.5	2,070
Canada	2,550	1.5	150	17.0	0.6	41	2.9	1,430
Japan	3,575	2.1	39	91.7	3.2	6	0.4	230
Australia and New Zealand	3,775	2.2	307	12.3	0.4	28	2.0	1,075
Total	86,550	51.5	94	921.8	32.1	637	45.6	843
World total	168,110	100.0	59	2,870.6	100.0	1,398	100.0	352

1/ Economic Research Service estimates based upon United Nations and other sources.

2/ From FAO Production Yearbook, 1960, Vol. 14. Arable land and land under tree crops. This does not include permanent meadows or pastures.

3/ Average 1955-57. Estimates derived from official population and national income data of respective countries, as reported to the United Nations.

4/ From Table 3, World Agricultural Situation 1961, U. S. Dept. Agr. World market prices were taken to be average 1958 wholesale or export prices in major exporting countries (e.g., Canada for wheat, Thailand for rice, the United States for soybeans, Brazil for coffee, Australia for wool, and Mexico for cotton).

5/ Includes Pacific Islands.

6/ Includes Soviet Union.

a high of \$307 for Australia and New Zealand to a low of \$39 for Japan. In the Southern Area, 68 percent of the world's population produced only 48 percent of total farm output. The range was from \$79 for Latin America to \$31 for the Far East.

The great difference in income--and consequently in purchasing power--between the two areas is reflected in equally great differences in the availability of public and private facilities and services to agriculture. This is particularly true for education, communication, transportation, and electric power. Differences in purchasing power and in the availability of foods also are reflected in the daily energy intake, and in the composition and quality of the diets. The Northern Area has no serious overall problems of providing its residents with a nutritionally adequate diet, except in some relatively small parts. In contrast, the situation is critical in large parts of the Southern Area.

The two areas differ markedly in their agricultural and industrial development. They differ also in climate and in the nature of their soils. The Southern Area is largely semitropical or tropical, the other temperate. Both areas are mountainous with large open flat spaces, but the Northern Area has most of the best agricultural land. Much of the Southern Area has depleted soils, low per-capita farm output, inadequate diets, poor health facilities, a high degree of illiteracy, poor communications, low consumer purchasing power, and low per-capita foreign exchange earnings.

The question arises: Why do these unfavorable conditions exist and persist in the Southern Area and not in the Northern? To answer in terms of illiteracy, the ravages of disease, and depleted soils is only to describe the outward symptoms of a deep-seated malady that has pervaded the life of the peoples of the Southern Area for centuries. This malady is less pervasive, less debilitating today than it was 15 years ago. World vital statistics clearly substantiate this. The death rate has dropped precipitously throughout the Southern Area. Illiteracy is diminishing. Soils are being made more productive, though very slowly.

Settlement of North America and parts of the South American continent relieved Europe of much of the pressure of population on the food supply between 1600 and 1900. Emigration was especially heavy during the 19th and early part of the 20th centuries when 35 million Europeans came to the New World. This made it possible, together with the rapid growth of industry and commerce, ocean shipping, and food imports, for those who remained largely to escape hunger and persistent malnutrition, as well as the ravages of endemic and other diseases occasioned by a continuous food intake at the subsistence level. European peoples were enabled by the mass exodus and industrial development to preserve their vigor, vitality, and will so essential to advancement in the arts and sciences.

The Europeans who settled in Canada, the United States, Argentina, Uruguay, and in the coastal regions of Brazil, Chile, and Peru found vast areas of virgin, fertile land which they organized into productive farms.

Those who occupied these vast areas have had little or no experience with the pressures of population on the food supply.

In Australia and New Zealand, availability of natural resources has been so favorable that food supply has been no problem. Conditions have also favored a sustained growth in per-capita income.

Japan is a special case in the Far East. Before 1854, Japan had been largely isolated for some 2,000 years on four islands, and had been master of its destiny during that period. It escaped the hordes of conquering vandals who swept back and forth over the Asian Continent for centuries.

The Japanese have husbanded their meager natural resources with prudence. They rapidly developed industry and promoted food production by large investments in irrigation, extensive research in agriculture, and by building a fertilizer industry over a 70-year period that now produces 230 kilograms of plant nutrients for each hectare of arable land. Records show that in each of the last 9 decades Japan has increased its yield per hectare of rice. The gains have been phenomenal over the last decade. In contrast, the trend in India was down until the last decade.

Such has been Japan's economic growth that, despite the sharp rise in population over the past 8 decades, its people have long had a food intake sufficiently high to sustain vigor and vitality. This is a marvel of the world, considering the meager physical resources and density of population of the Islands.

Conditions have been otherwise on the Continent of Asia south of the Soviet border and in the detached areas of Southeast Asia, excluding Japan. Half of the world's population live here on a fourth of the world's arable land. No marked industrial development or mass outmigrations have relieved the pressure of population on the food supply. Here for centuries, mass starvation and death from endemic and other contagious diseases and from wars have operated with uncompromising vigor periodically to reduce population to the level of the available food supply.

There is little doubt that something approximating the Malthusian theory operated in the area for centuries until the close of World War II. The Bengal famine in India in 1942-43 was the last such great adjustment. It is probable that similar but smaller adjustments occurred over the centuries until very recent times in Africa, and in parts of Central and South America inhabited largely by Indians.

Increasing productivity of world agriculture has relieved much of the fear of famine in most of the Southern Area, except Mainland China. However, malnutrition arising from insufficient intake of food energy and of protein, particularly animal protein, is widespread. This is manifested in pot-bellied preschool children, reduced body sizes, underweight adolescents, and adults much smaller and shorter-lived than well fed people.

The conclusion drawn from this analysis is that the basic and deep-rooted cause of the unfavorable situation in the Southern Area is a condition in the peoples--a condition in which desire is thwarted, the will blunted, and the human frame literally robbed of its marrow. It is a result of centuries of recurring famines and persistent malnutrition which have left the people wanting in vigor, vitality, and the will to do things for themselves which they would more likely do if they had an adequate diet.

Trends in Production and Population

Agricultural production for the world increased at an average annual rate of 1.8 percent during the 23-year period ending in 1960-61 (see appendix, table 23). This was slightly greater than the rate of population growth so that output per capita increased an average of 0.3 percent per year. During the 7 years ending in 1960-61, world production increased at 3 percent, resulting in an annual per-capita increase of 1 percent. Although the disruptions of the war adversely affected the long-time trend, much of the increases over the last 7 years resulted from substantial improvements of a permanent nature.

Table 23 shows world agricultural production in terms of total output--nonfood as well as food. Past studies have indicated, however, that total world production and world food production have shown virtually identical trends. For the less-developed Southern Area, agricultural production increased 1.7 percent annually over the 23 years but showed a slight annual decline in per-capita output. Latin America kept production just about even with population growth; Africa and West Asia gained slightly; but both the Far East and Communist Asia lost ground with declines of 0.3 and 0.4 percent, respectively.

For the recent 7-year period, production in the Southern Area increased at an average annual rate of 2.9 percent, showing an annual increase in per capita of 0.6 percent. Among the four regions, three show fairly uniform progress in increasing per-capita output. Two recent poor harvests in Mainland China lowered substantially the increase in per-capita output for Communist Asia.

For the industrialized Northern Area, agricultural production increased 1.9 percent annually for the 23-year period, while per-capita output rose 0.8 percent annually. For the more recent 7-year period, production has increased annually at 3.1 percent and per-capita output at 1.6 percent.

The largest per-capita gains in output in the shorter period occurred in Eastern Europe, including the Soviet Union, and in Japan. For the former area, the average annual per-capita increase was 2.7 percent and for Japan 4.9 percent. Much of this large increase for Eastern Europe can be accounted for by the addition of more than 100 million new acres to the crop base of the Soviet Union--the new lands east of the Volga and the Urals. This was a staggering achievement: 90 of the 100 million new acres were put into use in the 3 years 1954-56.

There are other potent factors at work including a determined will to move forward, and a vast store of scientific and technical knowledge reinforced with a large and growing number of skilled workmen. Potent factors operating in the other direction include difficulties in the administration of collective and state farms, a short growing season, and variable, uncertain rainfall over large parts of the arable area. Except for cotton, yields are low for all principal crops. To correct this, where it can be corrected by soil amendments, the Soviets have in the making a greatly expanded fertilizer industry.

Japan's phenomenal advance in agricultural production in recent years is unprecedented. That country has become self-sufficient in rice and has ceased to import barley.

Analysis of Resource Base

Now that the peoples of the Southern Area have largely become independent and have a future to make for themselves, what agricultural resources are available to them and how are they distributed?

In 1958, the Southern Area had 761 million hectares of arable land--54 percent of the world total--for the support of over two-thirds of the world population. This is 0.4 hectare per capita against 0.7 hectare per capita for the population of the Northern Area.

By regions, per-capita availabilities of arable land in the Southern Area in 1958 were fairly favorable for Latin America and for Africa and West Asia--0.5 hectare and 0.9 hectare, respectively--and these regions also have much additional land that can be made arable. For the Far East, the comparable figure is a little over 0.3 hectare and for Communist Asia it drops below 0.2 hectare. These regions have little additional land that can be added to the arable land base.

In much of the Southern Area, especially in the Far East, fertility of soils has been depleted by centuries of use without soil amendments. This is the primary cause of the low yields throughout the area. There is no question that these soils can again be made more productive by proper tillage, use of improved seeds, and application of proper amounts of fertilizer. This is especially true on irrigated soils and on soils with reasonably adequate rainfall.

Table 24 shows fertilizer production for the world, by regions, total, per capita, and per hectare of arable land, for the two major areas of the world. Fertilizer availabilities from domestic production in the Southern Area amounted to only 1.25 million metric tons of plant nutrients for 761 million hectares of arable land in 1958, compared with 25.7 million tons for 637 million hectares of arable land for the industrialized Northern Area. This computes at 0.6 kilogram per capita and 1.6 kilograms per hectare for the Southern Area against 27.9 kilograms per capita and 40.3 kilograms per hectare for the Northern Area.

One major reason why the peoples of the Northern Area have an adequate diet is that they have the plant nutrients to assure high production per unit. There are other reasons, of course--high incomes, large investments in agriculture, and available foreign exchange for food imports. The Southern Area is likely to encounter great difficulties in assuring an adequate food supply until its fertilizer production has been greatly increased, and put to use in combination with other improved farming practices.

The magnitude of this problem can be simply stated. For example, in addition to the foods needed to cover the deficits in animal and pulse protein and fat, for the people of the Southern Area to have a diet equal to the nutritional standard in 1962 they would need additional foods equivalent to 29 million tons of wheat over the quantity projected for consumption from domestic production and imports. To produce this quantity of wheat on arable land presently available would require roughly 3 million tons of plant nutrients--two-thirds nitrogen and one-third phosphoric acid. To build the required fertilizer plants in the consuming regions at present construction cost would require roughly \$1.30 billion for nitrogen and \$0.35 billion for phosphoric acid, or a total of \$1.65 billion.

This is for 1962. Farther into the future the food problem gets more difficult. It has been estimated that India alone, with its rapidly increasing population, must have in being in 1975 a fertilizer plant capacity of 4 million tons of nitrogen and 2 million tons of P_2O_5 to assure its food supply. India's present production capacity is about 200,000 tons of nitrogen and 50,000 tons of P_2O_5 . India's Third Five-Year Plan calls for construction of new fertilizer plants having an additional capacity of 800,000 tons of nitrogen and about 400,000 tons of P_2O_5 .

The World Food Budget for 1958

The statistical bases for determining the foods consumed by the world population in 1958 are the Department of Agriculture's published food balances for the countries of the Free World, and published and unpublished food balances for Communist Bloc countries. These food balance estimates summarize the food supply situation of a country or area by commodity or groups of commodities for the consumption year 1958. The availabilities of food per capita per day were then translated on a national basis into calorie, protein, and fat content. Levels of consumption are given as weighted averages by major regions in table 2. These averages are somewhat misleading in Latin America, Africa, and West Asia where a few countries with high consumption levels have sufficient weight to raise the regional average above the standard even though many countries in these regions have diet deficiencies. National food consumption levels by country are given in table 22.

In order that nutritional deficiencies in the diets of the countries and regions could be estimated, it was necessary to have nutritional reference standards. The calorie reference standards represent physiological requirements for normal activity and health, taking account of regional

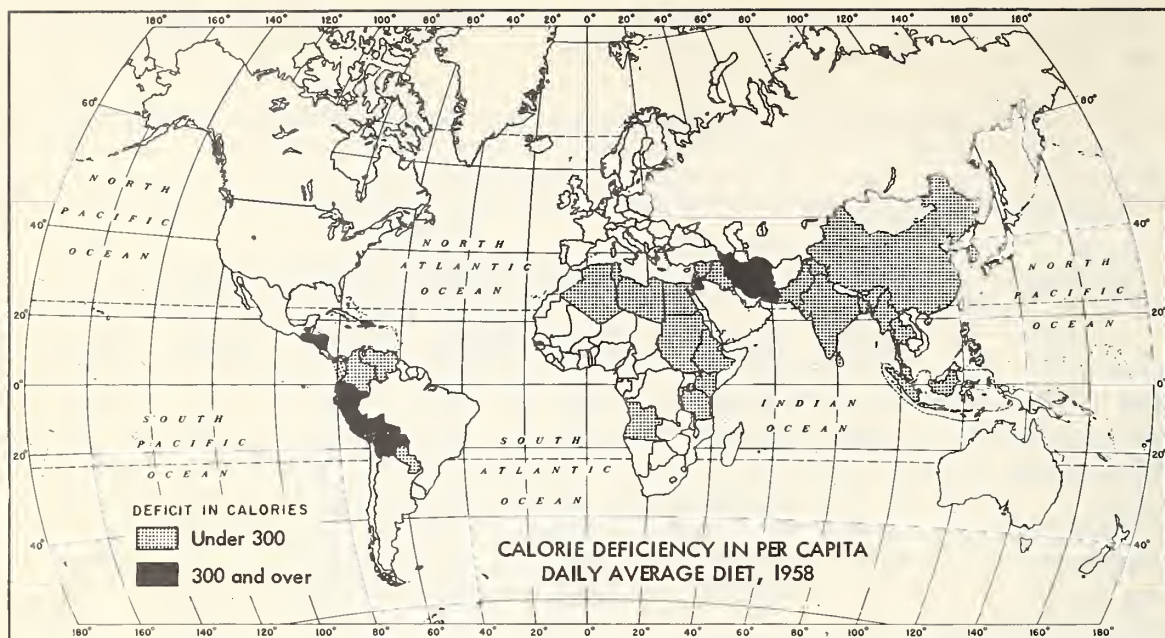
variations in environmental temperature, body weights, and the distribution by age and sex of the national population.

Table 2.--Food consumption: Daily average per capita levels, by regions, 1958

Country or region	:Countries: : in :Calories:		Protein				: Fat
	: region :	: : : :Animal: Pulse : Other : Total :					
	: : Number	: Number	: Grams	: Grams	: Grams	: Grams	: Grams
Canada	: --	3,080	62	2	30	94	138
Latin America	: 20	2,640	24	9	33	66	60
Mediterranean	:						
Europe	: 4	2,660	25	6	44	75	74
Other Western	:						
Europe	: 12	3,040	48	1	32	81	120
Soviet Union	: --	2,985	26	3	63	92	70
Other Eastern	:						
Europe	: 7	2,925	28	3	47	78	83
West Asia	: 7	2,365	13	5	55	73	40
Africa	: 21	2,454	11	10	43	63	44
Far East	: 11	2,100	8	12	36	56	32
Communist Asia	: 4	2,200	6	15	44	65	32
Oceania	: 2	3,210	67	5	31	103	136
United States	: --	3,220	66	5	26	97	149

The calorie standards vary from 2,300 for the Far East and Communist Asia to 2,710 calories for Canada and the Soviet Union. The reference standard for total protein--uniform for all countries and regions--consists of 60 grams per capita per day with a minimum of 17 grams of animal and pulse protein of which animal protein should not be less than 12 percent of the total, or about 7 grams. The reference standards for fat are expressed in terms of the amount that would provide 15 percent of standard calories. A more detailed discussion of the nutritional reference standards will be found in the appendix under Methodology.

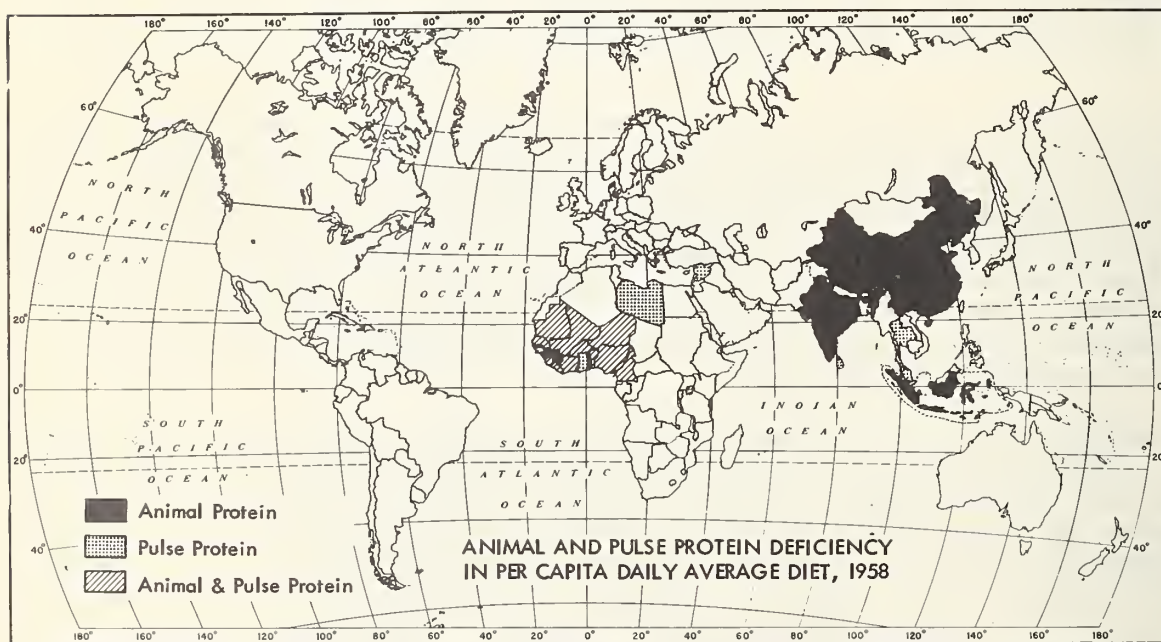
Figure 1 shows that total calories consumed in 1958 were, on the whole, low for many countries of West Asia, Northern and Eastern Africa, the Far East, and Mainland China (see also table 22). This is also true for Central America (excluding Costa Rica) and the island republics of the Caribbean (excluding Cuba), as well as for Bolivia, Peru, Ecuador, Colombia, Paraguay, and Venezuela, even though the regional average for Latin America does not disclose it. In these less-developed countries, there exist critical dietary deficiencies that tend to make these populations vulnerable to certain diseases, particularly those associated with deficiencies of protein and of vitamins and minerals provided by the foods that are good sources of animal protein.



U.S. DEPARTMENT OF AGRICULTURE

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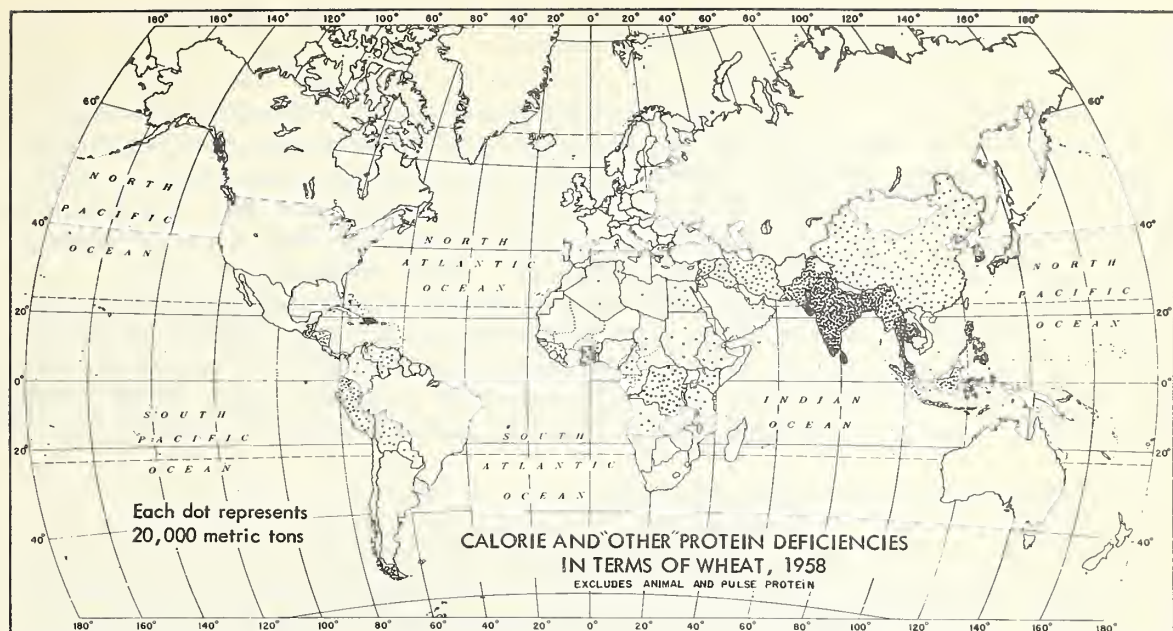
Figure 1



U.S. DEPARTMENT OF AGRICULTURE

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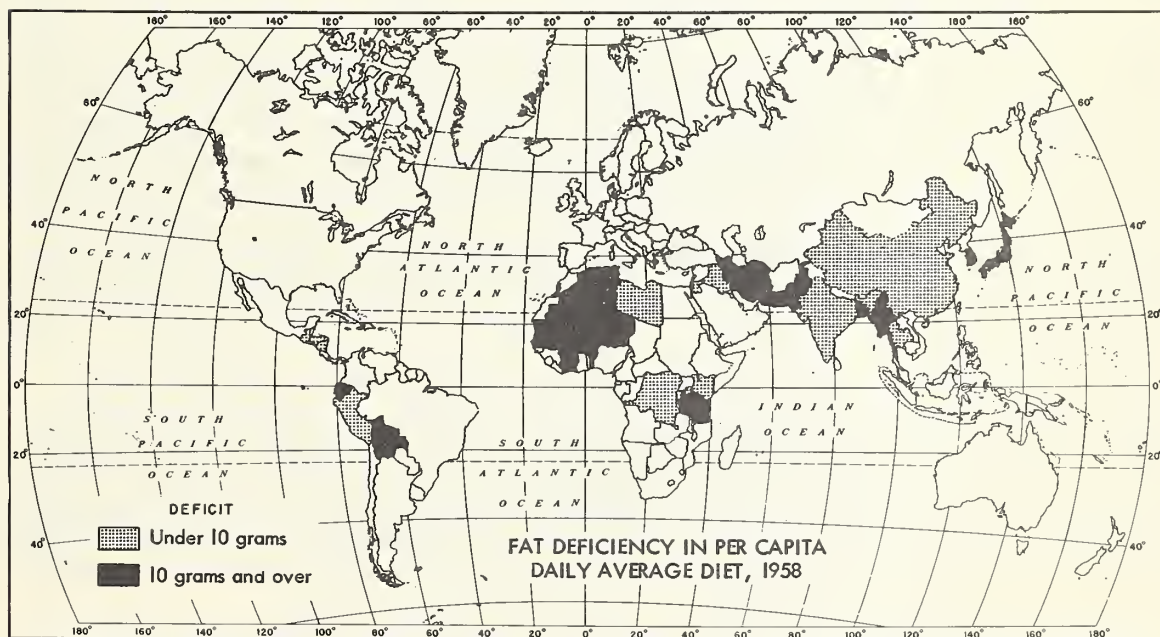
Figure 2



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Figure 3



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Figure 4

A more detailed discussion of the dietary situation by regions will be found in the regional sections of this report.

For the Northern Area, a comparison of nutritional reference standards with consumption levels disclosed in the 1958 food balance estimates shows that national average per-capita consumption exceeded the standards in all countries of Eastern Europe (including the Soviet Union) and all countries of Western Europe (including the Mediterranean area), as well as in Canada, the United States, Australia, and New Zealand. Most countries in the Southern Area, on the other hand, fell short of the reference standards (see table 22). In short, the Northern Area presents no serious overall dietary problem, although food is not always equitably distributed within countries of the area. The Southern Area, however, presents a most serious food problem which is by far most pronounced in the Far East (see figures 2, 3, and 4).

The World Food Budget for 1962 and 1966

To construct a world food budget for 1962 and 1966 it was necessary to project agricultural production by country, and by commodity for all countries, and to project population numbers for all countries for the same years. It was further necessary to determine food requirements for the diet-deficit countries in accordance with the nutritional reference standards, and to determine requirements for the countries whose people have nutritionally adequate diets by projecting effective demand. A detailed discussion of the methodology used in these projections will be found in the appendix. The population projections appear in table 21.

For convenience and ease of understanding, the nutritional deficiencies in the diet-deficit countries are expressed in terms of a few commodities widely known and used throughout the world. Deficiencies in animal protein are expressed in terms of nonfat dry milk and those in pulse protein in terms of dry beans and peas. Deficiencies in both "other" protein and in calories are expressed in terms of wheat, and those for fat in terms of vegetable oil. The deficiencies could be satisfied by many other commodities which, in some instances, can be more easily produced in diet-deficit countries than the commodities used in describing the deficiencies.

After projecting food requirements and food production for 1962 and 1966 for all countries, account was taken of normal food imports into the countries, including those under concessional terms in recent years. Careful thought was given to additional food requirements in countries where this need existed, and to facilities for receiving additional imports and distributing them effectively within the countries. Thought was also given to the disposition of Governments of diet-deficit countries to increase imports to satisfy nutritional deficiencies.

The projected world food budget for both 1962 and 1966 for the Northern Area takes account of trends toward increasing per capita consumption of animal products and decreasing consumption of certain starchy foods. These trends are occurring in both Western and Eastern Europe.

Tables 3 and 4 summarize requirements, production, and import needs or export availabilities for the world by regions, for 1958 and projected to 1962 and 1966, for wheat, dry beans and peas, nonfat dry milk, and vegetable oil--the four commodities in which dietary deficiencies are expressed in this study. Table 25 provides similar information for rice and coarse grains. Because of the importance of cotton and tobacco in world agriculture and in international trade in farm products, the same table provides similar information for these two products.

The United States and Canada are the only nations in the world with sufficient excess production over domestic needs and with sufficient financial resources to maintain reserve food stocks. These stocks are largely in wheat. They constitute the chief safeguard to the food supply of diet-deficit nations in cases of natural catastrophies.

If such reserve food stocks were not maintained, the great droughts and floods which have occurred periodically throughout history, and which we have every reason to expect will continue to occur, could cause famines of tragic proportions among the hundreds of millions of people whose food supply is unassured. It is for these and other reasons that wheat as a food and as a reserve food stock assumes such prominence in this study.

Wheat.--The term "consumption" as used in table 3 and the other commodity tables means total food and nonfood uses. For wheat this means total apparent domestic disappearance. In 1958, the world produced 239.4 million metric tons of wheat of which 217.3 million were consumed in all uses, leaving 22.1 million tons for addition to stocks. For 1962, production is projected at 231.5 million tons, total use or consumption at 232.7 million tons, leaving 1.2 million tons to be drawn from stocks. For 1966, production is projected at 245.4 million tons, consumption at 250.2 million tons, leaving 4.8 million tons to be drawn from stocks. Over a 5-year period surplus stocks would be drawn down approximately 15 million tons.

An additional 29.8 million tons of wheat would have been required in 1958 to raise consumption of "other" protein and of calories to the nutritional reference standards in the diet-deficit countries. The quantities needed in 1962 would be 29.4 million tons, and in 1966, 29.3 million tons.

Imports of wheat by the less-developed countries are projected to increase from 11.7 million tons in 1958 to 20.8 million in 1962 and to 25.3 million tons in 1966. These tonnages would permit slightly increased per-capita consumption of wheat but would leave diets still short of the nutritional standard. The importing countries are assumed to be able and willing to receive and effectively distribute these tonnages.

If the projected consumption of wheat should be realized, per-capita consumption in kilograms by region and for the world would be as follows:

	<u>1958</u>	<u>1962</u>	<u>1966</u>
	- - - - Kilograms - - - -		
<u>Diet-deficit regions</u>			
Latin America	57.0	57.7	59.3
Africa	33.0	35.6	36.6
West Asia	159.6	165.9	168.3
Far East	27.5	31.4	33.9
Communist Asia	39.6	40.3	39.6
Average	<u>39.8</u>	<u>42.4</u>	<u>43.7</u>
<u>Other regions</u>			
Canada ^{1/}	270.6	248.6	240.0
United States	95.9	85.3	85.8
Western Europe	150.0	151.0	151.2
Soviet Union	233.2	220.6	218.3
Other Eastern Europe	160.5	166.9	167.5
Australia and New Zealand	176.5	180.7	178.8
Average	<u>163.5</u>	<u>159.0</u>	<u>158.5</u>
World average	75.7	75.5	75.4

^{1/} Of the amount shown for 1958, about 62 kilograms was net consumption of food. This amount is expected to decline slightly by 1962 and 1966.

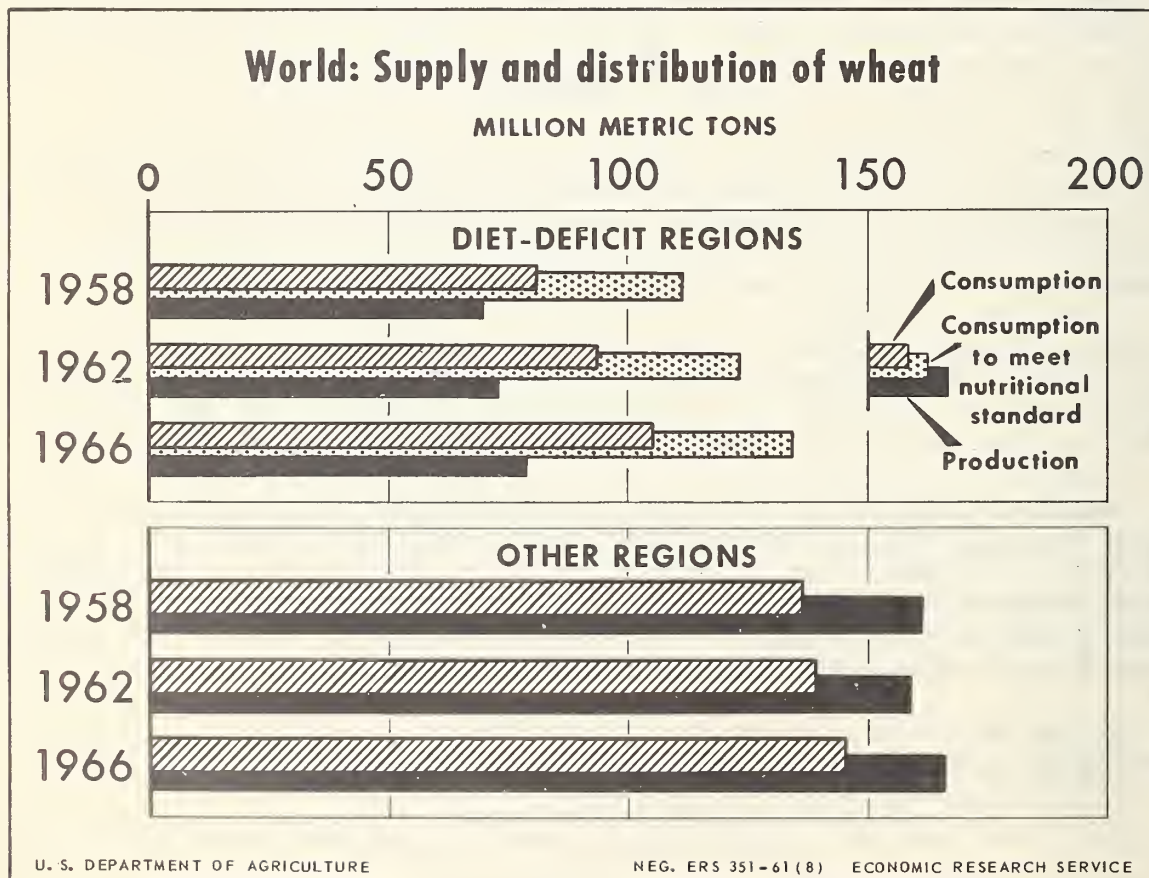


Figure 5

Table 3.--Wheat and dry beans and peas: Requirements, production, and import need or export availability, world by regions, 1958 and projected to 1962 and 1966

Commodity and region	1958				1962				1966			
	Requirements :		Requirements :		Requirements :		Requirements :		Requirements :		Requirements :	
	Esti- mated con- sump- tion :	To meet nutri- tional stan- dard :	Pro- duc- tion :	Pro- duc- tion :	To meet nutri- tional stan- dard :	Pro- duc- tion :	To meet nutri- tional stan- dard :	Pro- duc- tion :	To meet nutri- tional stan- dard :	Pro- duc- tion :	To meet nutri- tional stan- dard :	Pro- duc- tion :
WHEAT												
<u>Diet-deficit regions</u>												
Latin America	11.0	13.5	10.2	12.4	15.1	10.5	1.9	4.6	14.2	16.8	11.5	2.7
Africa	7.9	10.4	5.9	9.2	11.5	6.0	3.2	5.5	10.2	12.5	6.4	3.8
West Asia	12.0	13.6	11.4	13.7	15.0	12.5	1.2	2.5	15.3	16.6	13.9	1.4
Far East	23.5	43.5	15.3	29.1	49.4	18.6	10.5	30.8	34.2	53.9	21.8	12.4
Communist Asia	26.7	29.8	26.6	29.2	32.0	25.2	4.0	6.8	31.1	34.4	26.1	5.0
Total	81.1	110.8	69.4	93.6	123.0	72.8	20.8	50.2	105.0	134.2	79.7	25.3
Other regions												
Canada	4.6	4.6	10.1	4.6	4.6	13.3	-8.7	-8.7	4.8	4.8	13.8	-9.0
United States	16.7	16.7	39.8	15.9	15.9	29.9	-14.0	-14.0	17.1	17.1	29.9	-12.8
Western Europe	45.2	45.2	37.3	46.8	46.8	38.5	8.3	8.3	48.1	48.1	41.2	6.9
Soviet Union	48.7	48.7	62.8	49.1	49.1	54.4	-5.3	-5.3	51.6	51.6	56.6	-5.0
Other Eastern Europe	18.3	18.3	14.0	19.7	19.7	16.3	3.4	3.4	20.4	20.4	17.4	3.0
Oceania	2.7	2.8	6.0	3.0	3.1	6.3	-3.3	-3.2	3.2	3.3	6.8	-3.6
Total	136.2	136.3	170.0	139.1	139.2	158.7	-19.6	-19.5	145.2	145.3	165.7	-20.5
World total	217.3	247.1	239.4	232.7	262.2	231.5	1.2	30.7	250.2	279.5	245.4	4.8
DRY BEANS AND PEAS												
<u>Diet-deficit regions</u>												
Latin America	3.0	3.0	2.8	3.4	3.4	3.3	.1	.1	3.8	3.8	3.7	.1
Africa	4.8	5.0	4.8	5.3	5.4	5.4	-1.1	1/	5.7	5.8	5.8	-1.1
West Asia	.9	.9	.9	1.0	1.0	1.0	1/	1/	1.1	1.1	1.1	1/
Far East	14.1	14.2	12.8	17.0	17.1	17.0	0	.1	19.3	19.4	19.2	.1
Communist Asia	12.2	12.2	12.2	13.1	13.1	13.1	0	0	14.2	14.2	14.2	0
Total	35.0	35.3	33.5	39.8	40.0	39.8	1/	.2	44.1	44.3	44.0	.1
Other regions												
Canada	.1	.1	.1	.1	.1	.1	1/	1/	.1	.1	.1	0
United States	.8	.8	1.1	.8	.8	.9	-1.1	-1.1	.8	.8	1.1	-1.1
Western Europe	2.7	2.7	2.5	2.8	2.8	2.5	.3	.3	2.8	2.8	2.5	.3
Soviet Union	1.1	1.1	1.1	2.4	2.4	2.4	0	0	3.5	3.5	3.5	0
Other Eastern Europe	.5	.5	.5	.6	.6	.7	-1.1	-1.1	.6	.6	.7	-1.1
Oceania	1/	1/	1/	1/	1/	1/	0	0	1/	1/	1/	0
Total	5.2	5.2	5.3	6.7	6.7	6.6	.1	.1	7.8	7.8	7.9	-1.1
World total	40.2	40.5	38.8	46.5	46.7	46.4	.1	.3	51.9	52.1	51.9	0

1/ Less than 50,000.

Dry Beans and Peas.--Pulse protein deficiency in world consumption is small. This deficiency occurs primarily in West Africa and Southeast Asia. Most of the pulses are consumed in the regions of production and only small quantities move in international trade between regions (see table 3). Production and consumption, which are in close balance, are projected to rise from 40 million tons in 1958 to 52 million in 1966.

If the projected consumption of pulses should be realized, per-capita consumption by regions and for the world would be as follows:

	<u>1958</u>	<u>1962</u>	<u>1966</u>
	- - - - Kilograms - - - -		
<u>Diet-deficit regions</u>			
Latin America	15.5	15.8	15.9
Africa	20.0	20.5	20.4
West Asia	12.0	12.1	12.1
Far East	16.5	18.3	19.2
Communist Asia	<u>18.1</u>	<u>18.1</u>	<u>18.1</u>
Average	17.2	18.0	18.4
<u>Other regions</u>			
Canada	5.9	5.4	5.0
United States	4.6	4.3	4.0
Western Europe	8.9	9.0	8.8
Soviet Union	5.3	10.8	14.8
Other Eastern Europe	4.4	5.1	4.9
Australia and New Zealand	<u>1.3</u>	<u>1.3</u>	<u>1.2</u>
Average	6.2	7.7	8.5
World average	14.0	15.1	15.6

Nonfat Dry Milk.--Table 4 shows the production and utilization of non-fat dry milk for the world by regions for 1958 and projected for 1962 and 1966. Nearly all nonfat dry milk is produced, and about three-fourths is consumed, in the Northern Area. This is an expensive food in relation to the purchasing power of the lower-income people of Asia and Africa whose need for this product is greatest because of animal protein deficiency in their diets. For this reason, it is difficult to increase consumption except through school lunch and other mass-feeding programs. Consumption of nonfat dry milk in the Southern Area in 1958 is estimated at 208,000 metric tons, and is projected to 330,000 tons in 1962 and 479,000 tons in 1966. However, this increase satisfies only a small part of the animal protein deficiency in the diets of the less-developed regions, excluding Latin America.

The increased consumption is so small on a per-capita basis that it is hardly measurable in kilograms. For the world, per-capita consumption rises from nearly one-third in 1958 to one-half kilogram for both 1962 and 1966. The Southern Area shows only one-tenth kilogram consumed in 1958, no change for 1962, and only two-tenths for 1966. Per-capita consumption is about 3 kilograms per year in the United States, where about 60 percent of all non-fat dry milk is produced and 40 percent consumed.

Table 4.--Nonfat dry milk and vegetable oils: Requirements, production, and import need or export availability, world by regions, 1958 and projected to 1962 and 1966

Commodity and region	1958					1962					1966				
	Requirements :					Requirements :					Requirements :				
	Esti- mated con- sump- tion :	To meet : nutri- tional : stan- dard :	Pro- duc- tion :	Pro- duc- tion :	Pro- duc- tion :	For : nutri- tional : stan- dard :	To meet : nutri- tional : stan- dard :	For : nutri- tional : stan- dard :	To meet : nutri- tional : stan- dard :	For : nutri- tional : stan- dard :	For : nutri- tional : stan- dard :	To meet : nutri- tional : stan- dard :	For : nutri- tional : stan- dard :	To meet : nutri- tional : stan- dard :	For : nutri- tional : stan- dard :
NONFAT DRY MILK															
<u>Diet-deficit regions</u>															
Latin America	58	68	6			88	78	78	78	10	5	45	134	14	96
Africa	4	108	3			50	139	45	134	1/	1/	14	14	6	81
West Asia	10	10	0			112	12	12	12	1/	1/	14	14	1/	14
Far East	136	807	12			180	894	14	166	14	16	966	16	252	950
Communist Asia	0	683	0			0	715	0	715	0	0	790	0	0	790
Total	208	1,676	21			330	1,848	29	301	29	301	2,031	36	443	1,995
<u>Other regions</u>															
Canada	51	51	86			56	56	100	-44	100	100	65	120	-55	-55
United States	433	433	776			578	578	953	-375	953	953	669	1,043	-374	-374
Western Europe	288	288	204			441	441	356	85	356	356	556	463	93	93
Soviet Union	0	0	0			0	0	0	0	0	0	0	0	0	0
Other Eastern Europe	0	0	0			0	0	0	0	0	0	0	0	0	0
Oceania	16	21	77			17	22	116	-99	116	116	18	23	160	-137
Total	788	793	1,143			1,092	1,097	1,525	-433	1,525	1,525	1,308	1,313	1,786	-473
World total 2/	996	2,469	1,164			1,422	2,945	1,554	-132	1,554	1,554	1,787	3,344	1,822	1,522
VEGETABLE OILS															
<u>Diet-deficit regions</u>															
Latin America	1.0	1.1	1.0			1.2	1.2	1.1	.1	1.1	1.1	1.4	1.4	1.3	.1
Africa	1.7	2.0	2.5			2.0	2.1	3.0	-1.0	3.0	3.0	2.2	2.2	3.4	-1.2
West Asia	.4	.5	.3			.5	.6	.3	.2	.3	.3	.6	.6	.4	.2
Far East	3.7	5.2	4.7			4.6	6.1	5.4	-8	5.4	5.4	5.3	6.6	5.8	.8
Communist Asia	1.4	2.9	1.4			1.4	3.1	1.4	0	1.4	1.4	1.4	3.3	1.4	0
Total	8.2	11.7	9.9			9.7	13.1	11.2	-1.5	11.2	11.2	10.9	14.1	12.3	1.8
<u>Other regions</u>															
Canada	.2	.2	.1			.2	.2	.1	.1	.1	.1	.2	.2	.1	.1
United States	2.2	2.2	3.6			2.4	2.4	4.4	-2.0	4.4	4.4	2.5	2.5	5.1	-2.6
Western Europe	4.0	4.0	1.3			4.3	4.3	1.2	3.1	1.2	1.2	4.5	4.5	1.3	3.2
Soviet Union	1.7	1.7	1.6			1.8	1.8	1.5	.3	1.5	1.5	2.0	2.0	1.8	.2
Other Eastern Europe	.7	.7	.3			.8	.8	.5	.3	.5	.5	.9	.9	.5	.4
Oceania	1/	1/	.1			1/	1/	1/	1/	1/	1/	1/	1/	1/	1/
Total	8.8	8.8	7.0			9.5	9.5	7.7	1.8	7.7	7.7	10.1	10.1	8.8	1.3
World total	17.0	20.5	16.9			19.2	22.6	18.9	.3	18.9	18.9	21.0	24.2	21.1	3.1

1/ Less than half the unit.

2/ Consumption data do not include some substantial quantities that move under relief shipments and are not recorded in import statistics.

Vegetable Oil.--A dietary deficiency in fat is widespread throughout the Southern Area, though in terms of tonnages over 90 percent of the deficiency appears in Communist Asia and in the Far East, excluding those countries which are heavy producers of coconut products. It also appears in Central America, including Haiti; and in Ecuador, Bolivia, and Peru in South America; Turkey, Lebanon, Syria, and Jordan in West Asia; and in North and West Africa, Tanganyika, Kenya, and the Republic of the Congo. Table 4 shows that in 1958 the world produced 16.9 million tons of vegetable oil and consumed 17 million tons. For 1962, production is projected at 18.9 million tons and consumption at 19.2 million tons. For 1966, production rises to 21.1 million tons and consumption to 21 million.

Africa, the Far East, Communist Asia, and the United States are the principal world producers of vegetable oil. Production and export availabilities are expected to increase in the United States and Africa. In the Far East, however, consumption is expected to increase more than production. In Communist Asia, both production and consumption have been projected at 1958 levels.

Per capita consumption in kilograms of vegetable oil by regions and for the world is shown below:

	<u>1958</u>	<u>1962</u>	<u>1966</u>
	- - - -	Kilograms	- - - -
<u>Diet-deficit regions</u>			
Latin America	5.2	5.6	5.8
Africa	7.1	7.7	7.9
West Asia	5.3	6.1	6.6
Far East	4.3	5.0	5.3
Communist Asia	<u>2.1</u>	<u>1.9</u>	<u>1.8</u>
Average	4.0	4.4	4.5
<u>Other regions</u>			
Canada	11.8	10.8	10.0
United States	12.6	12.9	12.5
Western Europe	13.3	13.8	14.0
Soviet Union	8.1	8.1	8.5
Other Eastern Europe	6.1	6.8	7.4
Australia and New Zealand	<u>2.6</u>	<u>2.5</u>	<u>2.4</u>
Average	10.6	10.9	11.0
World average	5.9	6.2	6.3

The Nutritional Gap and Related Problems

The quantities of specified foodstuffs required to raise projected levels of consumption in 1962 and 1966 to the levels required to satisfy nutritional standards in the diet-deficit regions are shown in table 5.

Animal Protein.--The reference standard for animal protein is 7 grams per day per person or about 12 percent of the total protein. This is a minimum. Where a deficiency occurs it may be critical for it affects lower

income persons, and most adversely preschool children and pregnant and lactating mothers--those most in need of this food nutrient.

Table 5.--Dietary deficiencies of diet-deficit regions not satisfied by projected consumption for 1962 and 1966

	: Animal protein	: Pulse protein	: Other protein	: Fat in terms
	: in terms of	: in terms of	: calories in terms	: of vegetable
	: nonfat dry milk	: beans and peas	: of wheat	: oil
	: 1962	: 1966	: 1962	: 1966
	: 1962	: 1966	: 1962	: 1966
: - - - - - 1,000 metric tons - - - - -				
Latin America	: 0	: 0	: 0	: 2,714
Africa	: 89	: 64	: 69	: 75
West Asia	: 0	: 0	: 0	: 1,283
Far East	: 714	: 698	: 81	: 90
Communist Asia	: 715	: 790	: 0	: 0
Total	: 1,518	: 1,552	: 150	: 165
	: 2,665	: 2,361	: 1,297	: 1,568
	: 49	: 20	: 48	: 1,299
	: 3,250	: 1,660	: 1,860	: 3,345
	: 29,357	: 29,308	: 3,445	: 3,232

In the projected 1962 and 1966 food budgets, animal protein shortages appear only in scattered areas in Central and West Africa, in India and Indonesia, and in Communist Asia. The deficiency ranges from about 1 gram in Nigeria, India, and Communist Asia to 3 grams in Indonesia, and 4 grams in Liberia. Because of inadequate purchasing power of lower income groups and faulty distribution of foodstuffs within countries, deficits may be more serious than indicated by the foregoing figures. The tonnages for these regions expressed in terms of nonfat dry milk are shown in table 5.

As is shown in table 4, world production of nonfat dry milk only slightly exceeds consumption. Canada and the United States, and Australia and New Zealand account for all excess production by region over domestic consumption.

If larger shipments from surplus to diet-deficit regions are to occur, production in surplus regions will have to be increased proportionally. Such an increase would probably be used primarily in expanding school lunch programs. Such programs do not reach the persons most in need of animal protein.

Countries with animal protein shortages would be exceedingly reluctant to establish and operate countrywide free food distribution programs. If the required animal protein is to be consumed by those most in need, purchasing power of consumers must be increased. This can come about only through further economic development. As such development occurs every attempt should be made to increase the efficiency of milk production and to expand the fisheries industry. Much can be done on both approaches in all animal protein shortage areas, particularly milk in India and fisheries in Indonesia.

Pulse Protein.--The reference standard for pulse protein is an amount which when added to available animal protein equals 17 grams. This protein supplements cereal protein and is especially important in the diet when animal protein is less than 17 grams.

A deficiency in pulse protein in 1962 appears only in Ceylon at 5 grams, in Malaya and Thailand, each at about 1 gram, and in scattered areas of Central and Western Africa, ranging from about 1 gram in Nigeria to 7 grams in Liberia. The pulse protein deficit in 1962, expressed in terms of dry beans and peas, is 69,000 tons for Africa and 81,000 tons for the Far East. Somewhat larger tonnages are indicated for 1966.

Pulse protein shortages could perhaps best be met by increasing production in the deficit regions. This does not appear to pose any formidable problems. It may be noted that Thailand is a substantial exporter of pulses and Nigeria of peanuts. In both countries the shortage in consumption appears to relate more to low personal income, faulty internal distribution, and government export policy than to a shortage of supply.

"Other" Protein and Calories.--The reference standard for total protein is 60 grams. The standard for calories varies from 2,300 for the Far East and Communist Asia to 2,710 for Canada and the Soviet Union. Deficiencies in "other" protein (protein other than animal and pulse) and in calories are expressed in terms of wheat.

In the projected 1962 and 1966 food budgets, calorie shortages occur in 36, and "other" protein shortages in 31 of the 60 less-developed countries and areas included in this study. The two shortages generally occur together in the same country. Principal exceptions are the nine countries and areas of Central and Western Africa where no calorie shortage occurs, but where animal and pulse protein and fat shortages are widespread. The reason for this is that in this tropical area cassava, other root crops, bananas, and plantains are generally plentiful so that food energy sources are readily at hand.

Calorie and "other" protein shortages, expressed in terms of wheat, total over 29 million tons for both 1962 and 1966 (see table 5). The 1962 food budget for the five diet-deficit regions includes 93.6 million tons of wheat from domestic production and 20.8 million from imports, including accelerated concessional purchases and grants. This is 9.1 million tons more wheat than the regions imported in 1958. The 1966 food budget provides for imports of 25.3 million tons. These tonnages are about as much as these regions can and are willing to receive and move into consumption. The remaining deficit therefore of over 29 million tons for each of the 2 years cannot be further reduced by imports. Even if it could, it would seem unwise to create dependence on outside sources for a larger share of the food supply.

The diet-deficit regions should therefore be encouraged and assisted to increase their own wheat and other cereal production, first to erase the nutritional shortage, and then to reduce imports. It is only by such means

that the diet-deficit nations can assure the food supply essential for their survival, and establish the conditions necessary for economic growth and advancement of their material well-being.

In the densely populated Far East, where land resources are limited, population is expanding rapidly, and the nutritional deficit in "other" protein and in calories in terms of wheat is 20 million tons. Ever-increasing availabilities of plant nutrients and larger and larger expenditures for irrigation will be necessary to increase cereal production sufficiently to erase this deficit. Over the next 15 years, this means the expenditure of some \$3 billion for construction of fertilizer plants and a similar expenditure for irrigation works.

Fat.--The reference standard for fat is the amount that will provide 15 percent of standard calories. This is regarded as a nutritional floor rather than a desirable standard. For the Southern Area, the standard ranges from 38 grams per person per day for the Far East and Communist Asia to 42 grams for Latin America.

This nutritional shortage occurs in 27 of the 60 countries studied in the Southern Area. The total deficit expressed in terms of vegetable oil is 3.3 million tons in 1962 and 3.2 million in 1966. The shortage is primarily in the Far East and Communist Asia (table 5).

The Far East, which shows a shortage in consumption of 1.6 million tons in 1962 and 1.3 million in 1966, is the world's third largest net exporter of vegetable oil and oil-bearing seeds and materials, exceeded only by the United States and Africa (table 5). The major Far East exporting countries--Malaya, the Philippines, Indonesia, and Ceylon--do not show shortages in consumption. In the remaining countries, therefore, the problem appears to be lack of foreign exchange for imports and lack of consumer purchasing power.

In countries where effective demand for vegetable oil is weak because of a relatively high price compared to other food and living necessities, imports of vegetable oil under concessional terms would only increase the oil consumption of those whose present intake is probably well above the fat standard. This would leave persons with a fat shortage generally unaffected.

Since fat-deficit countries are unlikely to engage in countrywide free food distribution programs, the problem can only be resolved by increases in personal income through economic development. Such increases will tend to spur production of vegetable oil within the countries and may also encourage further imports.

It may be generally concluded from this analysis that nutritional shortages are closely related to low per-capita production of food and goods that can be traded for food. These shortages can only be erased by substantial and sustained increases in agricultural production that make for balanced economic development in the diet-deficit regions themselves.

Canada

Canada has ample supplies of food to meet its nutritional requirements for calories, fat, and protein, and to export grains, live cattle, and other products. Increasing farm output, together with imports, is likely to maintain the diet of the growing population at a high level in the years to come.

Supported by an advanced technology, Canadian farmers have produced around 50 percent more in the last decade than before the war, though output has fluctuated considerably because of variable growing conditions. Further increases will be encouraged by mechanization, greater use of agricultural chemicals, large-scale irrigation and land reclamation projects, and governmental incentives. As in the United States, rising efficiency has resulted in movement of population from rural to urban areas. Canada's agricultural labor force declined from 36 percent of the total labor force in 1933 to only 12 percent in 1959.

Grains are Canada's major export, particularly high protein wheat of the milling grades. An average of 60 percent of the wheat, 30 percent of the barley, and nearly 10 percent of the oats produced in the period 1950-58 were exported. Shipments of feed grains, animal protein, pulses, and other vegetables have tended to decline because of increased domestic utilization. Most exports are for cash or short-term credit, though grants and concessional sales of wheat have been made to Colombo Plan countries, and grants of wheat and nonfat dry milk to United Nations relief agencies. Canada has supported the principle of a "world food bank."

Imports of rice, fruit, and vegetables are likely to increase with population growth, but increased production may reduce oilseed imports.

The average daily caloric intake of more than 3,000 per capita is supplied largely from the consumption of domestically produced meat and poultry products, dairy products, wheat, and sugar.

With a high percentage of the diet supplied from animal products, as in the United States, there is no protein deficit for the nation as a whole.

There is a declining trend which is expected to continue in per-capita consumption of cereals and potatoes. Consumption of meats, fruit, and vegetables is expected to rise substantially, while the level for butter is expected to decline, and that for other dairy products as a whole to remain about constant or to rise slightly.

United States

A highly advanced agriculture and a large area with wide diversity of soil and climate, make this country self-sufficient in most foods, provide large quantities for export, and produce substantial surpluses of grains

and cotton. The nation's high agricultural potential indicates this situation is likely to continue over the next decade though some reduction in surpluses seems likely.

The United States imports all coffee, cocoa beans, bananas, and tea consumed. It also normally imports sugar, meats, fruits and nuts, oilseeds, and tobacco to supplement domestic production, but except for sugar, these imports amount to only a small part of U. S. consumption.

A large share of the U. S. production of wheat, rice, cotton, tobacco, soybeans, barley, lard, and tallow moves into foreign outlets, along with smaller quantities of many other items. About three-fifths of the exports in 1960-61 moved under some form of governmental assistance, a large part of it to less-developed countries.

Domestic consumption of food has increased during the postwar period about in proportion to population, with only a small gain in per capita consumption. Further increases in consumer purchasing power are likely to contribute to only a relatively slow rise in consumption per person. Over the past decade, per-capita consumption of beef, poultry, and processed fruits and vegetables has increased while consumption of fresh fruits and vegetables, butter, potatoes, and cereals has declined. Per-capita use of fats and oils has remained virtually stable. These trends are expected to continue well into the next decade. Pounds of food consumed per person will probably change little as the shift to high protein and convenience-type foods is largely offset by declines in consumption of cereals, potatoes, and fresh fruits and vegetables. In recent years, about 85 percent of the U. S. food supply has been consumed domestically with the remaining 15 percent available for export.

Most of current U. S. output available for export consists of wheat, cotton, and feedgrains. Stocks of grains are expected to be gradually reduced over the next few years as a result of a stabilization program for corn and sorghum grain which went into effect in 1961, and programs for wheat and barley which will begin in 1962. However, the U. S. is expected to continue to produce exportable supplies of a wide range of food commodities over the next decade.

Latin America

Latin America's population is growing more than 2.5 percent a year, faster than in any other major area of the world. Although farm production has risen at an even faster rate during the last decade, food consumption was below the nutritional standard in 1958. Agricultural resources of the area are large, and the increase in farm output is likely to continue to exceed population growth, but consumption is expected to remain below the nutritional standard in 1966.

The region, which includes Mexico, Central America, the Caribbean, and South America, has about one-sixth of the world's land surface. Feudal systems of production still prevail in many parts. In some areas, land is

held in large blocks by absentee owners and operated by hired managers. In other places, fertile valley land is held in large haciendas devoted primarily to livestock while small farmers must subsist on marginal slopes. On the other hand, land in some areas is divided into holdings much too small to support a family. Tax systems often encourage speculation in land and bear heavily on domestic and export trade. Inadequate transportation hinders marketing and slows development of new lands.

Most of the more productive land and much of the labor force in tropical and subtropical zones are in such specialized export products as sugar, cotton, coffee, bananas, and other fruits. The same is true of grain and livestock in such temperate areas as Argentina and northwest Mexico. Much of Latin America's management and technical skills, fertilizers, research facilities, and irrigation capacity is devoted to these areas. The basic food crops (corn, pulses, potatoes, plantains) are often produced on marginal land by unskilled labor.

Agricultural technology is at a low level in most of the region, though significant gains have been made in the last several years. Subsistence farms, depending on oxen or hand power, are common throughout the area. On farms engaged in commercial food production, however, horse-and tractor-drawn equipment is widely used.

Use of fertilizer, other agricultural chemicals, improved seed and breeding stock, machinery, and disease control, is increasing but remains far below the levels of more-developed areas. In 1958-59, Latin America used 6 times as much nitrogenous fertilizer as 10 years earlier; consumption of phosphoric acid and potash also was up sharply. Three-fourths of the nitrogen, half of the P_2O_5 , and less than a fifth of the potash were produced within the region. Numbers of tractors also are rising rapidly. But, in general, capital is scarce and labor inputs high.

About 46 percent of the Latin American labor force is used in agriculture, ranging from 25 percent in Argentina and Uruguay to more than 60 percent in Haiti, Bolivia, and tropical Central America. An estimated 40 percent of the population is illiterate; rural people who have schooling seldom get more than a primary education. But in Argentina and Mexico, increased education of rural people has been an important factor in the advancement of agriculture.

Much of the expansion in agricultural production has been furthered by an increase in public facilities and service. These include improvements in power, irrigation, land reclamation, and transportation; government programs to stabilize supplies and prices; expanded governmental research and extension; and credit programs. Foreign aid has contributed to these developments.

Economic incentives to increase output are relatively low in Latin America because of low purchasing power, widespread subsistence agriculture, and declining prices for farm products the last several years. Average income per person for the region has been estimated at \$254, ranging from

about \$65 in Haiti to approximately \$600 in Venezuela. Ranges within countries are even greater. Probably about half of the population consumes mostly what they themselves produce, thus contributing little to the area's commerce.

Prices for agricultural products have trended down since 1950, and the rate of economic growth has slowed considerably. Inflation in the nonfarm economy has resulted from deficit spending and an unfavorable balance of foreign trade. A number of countries have instituted exchange and monetary reforms and imposed austerity measures.

Food balances prepared in 1958 for the 20 Latin American Republics with 97.5 percent of total population for the region show that food availabilities per capita averaged 2,640 calories per day, higher than any other underdeveloped area, and 140 calories above the nutritional level established for Latin America. Regional weighted averages show that animal protein exceeded the standard by 17 grams per day, total animal and pulse protein by 16 grams, and fat by 18 grams.

These weighted averages are misleading in that they reflect national average calorie and protein availabilities well above standard for Argentina, Brazil, Chile, Cuba, Mexico, and Uruguay -- countries with 68 percent of the region's population. In 1958, deficits in other, below-standard countries were equivalent to 2.5 million metric tons of wheat, 10,000 tons of nonfat dry milk, and 100,000 tons of vegetable oil.

Average availability of calories was below reference standards in 13 of the 20 Republics in 1958. Lower calorie levels were typical of countries, particularly in tropical and mountainous regions, having large segments of populations living in rural areas. For the region, these levels ranged from less than 1,900 calories in Bolivia and Haiti to more than 3,300 in Argentina.

Haiti, with a per-capita average of 4 grams, was the only country below the prescribed standard for animal protein. Aside from Honduras and Guatemala, with per-capita averages of 9 grams, meat products usually provide much of the requirements for both animal and pulse protein. Pulses, particularly beans, are important in the diet of several countries, including Brazil, Dominican Republic, El Salvador, Haiti, and Mexico.

Corn is usually supplemented by potatoes, cassava, bananas, sugar, and other low-protein foods in the diet of rural people in tropical and mountainous areas of Latin America. Availability of "other" protein is below 30 grams in a number of countries, including Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Haiti, Nicaragua, Paraguay, and Venezuela, and exceeds 40 grams only in Honduras, Mexico, and Uruguay.

Per-capita consumption of animal and vegetable fats is relatively high in Argentina, Chile, Costa Rica, Cuba, Mexico, and Uruguay, while supplementary fat is provided in sufficient quantity by cereal and animal products in some other countries. Fat is deficient in only 8 of the 20 Republics, with serious shortages in Bolivia, Ecuador, and Haiti.

The 1958 food balances reflect substantial imports of food items for both nondeficit and deficit countries. Brazil, the largest wheat importer with approximately 1.6 million metric tons, was followed by Peru, Venezuela, Cuba, Chile, and Colombia with quantities ranging from 50,000 to 300,000 tons. Varying amounts of wheat as well as rice, coarse grains, and fats and oils were imported by deficit countries. Argentina and Uruguay exported wheat, coarse grains, meat, and other animal products outside the area, principally to Europe. More productive lands in many deficit areas provide export production of coffee, sugar, cacao, and bananas. Part of the foreign exchange so earned is used to import food commodities. These foodstuffs go mainly to urban populations and seldom reach diet-deficient rural people. Latin America was a net importer of 1 million tons of wheat in 1958. Rice, dry beans and peas, and dairy foods were also on a net import basis. Net export of coarse grains was about 1.5 million tons. Exports of meat exceeded imports.

Latin America has sufficient land and labor resources to provide adequate diets for the 238 million people expected in 1966--45 million more than in 1958. Most larger and many smaller countries have development programs aiming at greater productivity through agrarian reform. Farm production is likely to increase enough in the next 5 years to provide some increase in consumption per person, but diets for the area as a whole are unlikely to reach the nutritional standard by 1966.

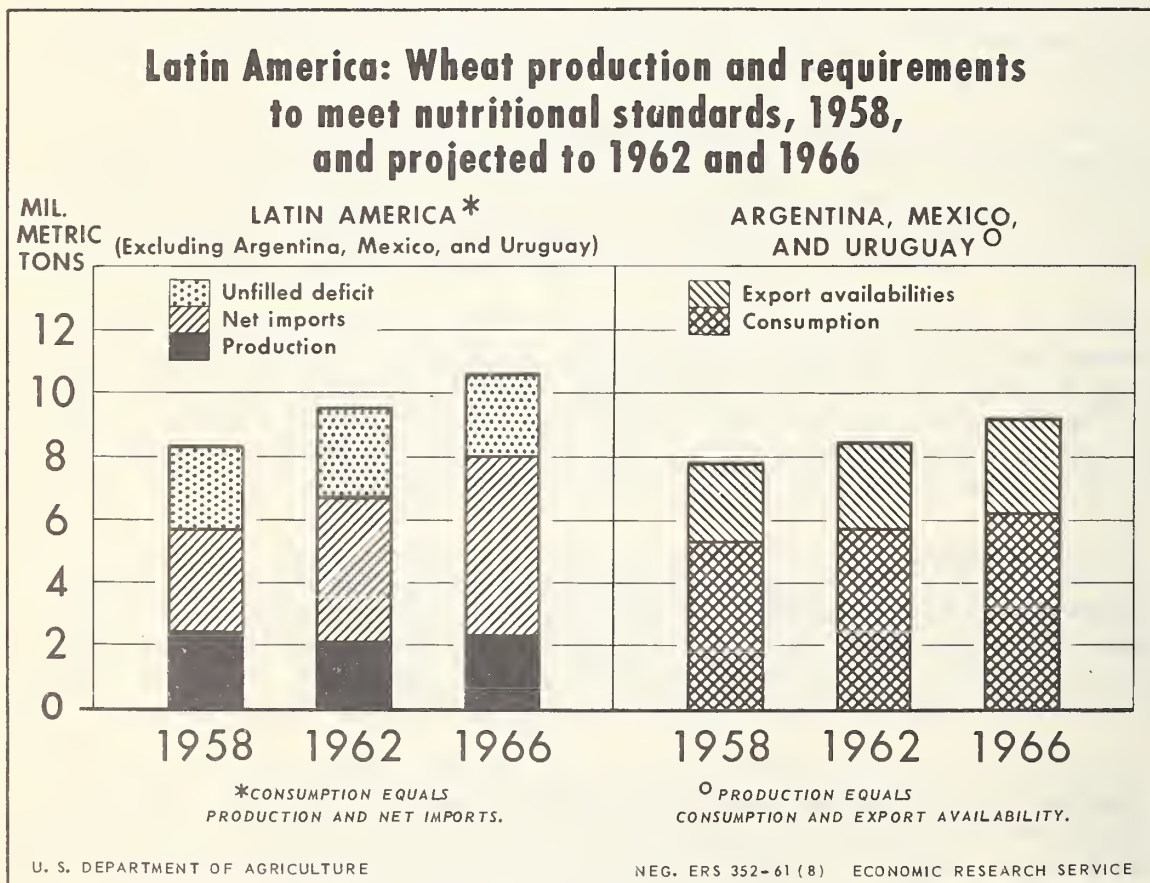


Figure 6

Table 6.--Wheat: Requirements, production, and import need or export availability, Western Hemisphere, 1958 and projected to 1962 and 1966

Country	1958				1962				1966			
	Requirements		Pro-		Requirements		Pro-		Requirements		Pro-	
	Esti- mated	:To meet : nutri- : tional sumption:standard:	duc- tion : con- sumption:standard:	:Pro- : duc- : tion : con- sumption:standard:	For pro- jected : nutri- con- : tional sumption:standard:	:To meet : nutri- : tional sumption:standard:	:Pro- : duc- : tion : con- sumption:standard:	:To meet : nutri- : tional sumption:standard:	For pro- jected : nutri- con- : tional sumption:standard:	:To meet : nutri- : tional sumption:standard:	:Pro- : duc- : tion : con- sumption:standard:	:To meet : nutri- : tional sumption:standard:
<u>Latin America</u>												
Argentina	3,652	3,652	5,810	0	3,755	3,755	6,500	- 2,745	4,100	4,100	7,000	- 2,900
Bolivia	134	373	22	0	201	424	16	185	247	459	17	230
Brazil	2,306	2,306	781	0	2,650	2,650	500	2,150	3,200	3,200	500	2,700
Chile	1,241	1,241	1,214	0	1,300	1,300	1,185	115	1,400	1,400	1,300	100
Colombia	249	307	140	0	380	667	160	220	490	710	170	320
Costa Rica	41	46	0	0	52	52	0	52	59	59	0	59
Cuba	259	259	0	0	230	280	0	230	250	308	0	250
Dominican Rep.	32	414	0	0	105	343	0	105	140	366	0	140
Ecuador	77	360	40	0	119	404	59	60	140	445	77	63
El Salvador	34	200	0	0	50	228	0	50	65	255	0	65
Guatemala	77	222	18	0	98	249	23	75	116	282	26	90
Haiti	56	295	0	0	65	313	0	65	110	343	0	110
Honduras	22	81	1	0	35	86	0	35	40	95	0	40
Mexico	1,170	1,170	1,376	0	1,400	1,400	1,400	0	1,581	1,581	1,700	- 119
Nicaragua	23	118	0	0	40	120	0	40	60	137	0	60
Panama	28	46	0	0	36	36	0	36	48	48	0	48
Paraguay	76	115	5	0	95	108	15	80	99	99	20	79
Peru	466	1,036	143	0	560	1,277	170	390	645	1,391	175	470
Uruguay	467	467	593	0	502	502	450	52	533	533	533	0
Venezuela	295	512	7	0	387	580	7	380	477	654	7	470
Other	323	323	0	0	344	344	0	344	367	367	0	367
Total	11,028	13,543	10,150	0	12,404	15,118	10,485	1,919	14,167	16,832	11,525	2,642
Canada	4,631	4,631	10,116	0	4,600	4,600	13,300	- 8,700	4,850	4,850	13,750	- 8,900
United States	16,659	16,659	39,781	0	15,921	15,921	29,937	-14,016	17,119	17,119	29,937	-12,818

Table 7.--Dry beans and peas: Requirements, production, and import need or export availability, Western Hemisphere, 1958 and projected to 1962 and 1966

Country	1958				1962				1966			
	Requirements		Pro-		Requirements		Pro-		Requirements		Pro-	
	Esti- mated con- sumption: standard:	To meet nutri- tional:	duc- tion	tion	To meet nutri- tional:	duc- tion	tion	tion	To meet nutri- tional:	duc- tion	tion	tion
Latin America	42	42	49		45	65	- 20	- 20	49	49	70	- 21
Argentina	21	21	20		22	15	7	7	24	24	17	7
Bolivia	1,547	1,547	1,498		1,730	1,730	0	0	1,949	1,949	1,930	19
Chile	87	87	122		70	106	- 36	- 36	75	75	125	- 50
Colombia	82	82	81		87	86	1	1	98	98	98	0
Costa Rica	15	15	15		18	18	0	0	20	20	20	0
Cuba	90	90	17		97	36	61	61	107	107	48	59
Dominican Rep.	30	30	30		38	38	0	0	44	44	44	0
Ecuador	50	50	50		56	56	0	0	61	61	61	0
El Salvador	50	50	43		57	40	17	17	64	64	40	24
Guatemala	49	49	50		55	41	14	14	62	62	48	14
Haiti	75	75	75		80	77	3	3	87	87	80	7
Honduras	23	23	31		26	37	- 11	- 11	29	29	45	- 16
Mexico	593	593	452		672	650	22	22	750	750	750	0
Nicaragua	12	12	12		18	20	- 2	- 2	20	20	23	- 3
Panama	11	11	8		12	6	6	6	13	13	7	6
Paraguay	20	20	20		21	20	1	1	24	24	20	4
Peru	105	105	106		117	117	0	0	127	127	127	0
Uruguay	3	3	3		3	3	0	0	3	3	3	0
Venezuela	98	98	70		111	90	21	21	126	126	110	16
Other	46	46	19		48	48	28	28	52	52	21	31
Total	3,049	3,049	2,771		3,383	3,271	112	112	3,784	3,784	3,687	97
Canada	62	62	70		64	65	- 1	- 1	70	70	70	0
United States	776	776	1,084		821	925	- 104	- 104	835	835	1,057	- 222

Table 8 Nonfat dry milk: Requirements, production, and import need or export availability Western Hemisphere, 1958 and projected to 1962 and 1966

Country	1958				1962				1966			
	Requirements :				Requirements :				Requirements :			
	Esti- :To meet :Pro- :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet	ated : nutri :duc- : jected : nutri- : jected : nutri- : jected : nutri- : jected : nutri- : jected : nutri-	con- : tional : tion : con- : tional : tion : con- : tional : tion : con- : tional : tion : con-	sumption:standard:	For pro-:To meet :Pro- :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet	ected : nutri :duc- : jected : nutri- : jected : nutri- : jected : nutri- : jected : nutri- : jected : nutri-	con- : tional : tion : con- : tional : tion : con- : tional : tion : con- : tional : tion : con-	sumption:standard:	For pro-:To meet :Pro- :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet :To meet	ected : nutri :duc- : jected : nutri- : jected : nutri- : jected : nutri- : jected : nutri- : jected : nutri-	con- : tional : tion : con- : tional : tion : con- : tional : tion : con- : tional : tion : con-	sumption:standard:
Latin America												
Argentina	0	0	0	0	0	0	0	0	0	0	0	0
Bolivia	1	1	0	0	1	1	1	1	1	1	1	1
Brazil	7	7	1	1	11	11	10	10	17	17	15	15
Chile	14	14	0	1	12	12	11	11	14	14	13	13
Colombia	9	9	0	1	10	10	9	9	11	11	10	10
Costa Rica	1	1	1	2	2	2	0	0	2	2	2	2
Cuba	2	2	2	2	2	2	0	0	2	2	0	0
Dominican Rep.	0	0	0	0	0	0	0	0	0	0	0	0
Ecuador	1	1	0	1	1	1	1	1	1	1	1	1
El Salvador	1	1	0	3	3	3	3	3	7	7	7	7
Guatemala	1	1	0	1	1	1	1	1	1	1	1	1
Haiti	1	11	0	11	11	11	11	11	12	12	12	12
Honduras	0	0	0	2	2	2	2	2	3	3	3	3
Mexico	10	10	2	15	15	15	12	12	18	18	14	14
Nicaragua	1/	1/	0	1	1	1	1	1	1	1	1	1
Panama	1	1	0	1	1	1	1	1	1	1	1	1
Paraguay	0	0	0	1	1	1	1	1	2	2	2	2
Peru	2	2	0	4	4	4	4	4	5	5	5	5
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	0	0	2	2	2	2	2	2	2	2	2
Other	7	7	0	8	8	8	8	8	10	10	10	10
Total	58	68	6	88	88	10	78	78	110	110	14	96
Canada	51	51	86	56	56	100	-44	-44	65	65	120	-55
United States	433	433	776	578	578	953	-375	-375	669	669	1,043	-374

1/ Imported nonfat dry milk not separately shown in trade statistics.

Table 9. --Vegetable oil: Requirements, production, and import need or export availability, Western Hemisphere, 1958 and projected to 1962 and 1966

Country	1958				1962				1966			
	Requirements :		Requirements :		Requirements :		Requirements :		Requirements :		Requirements :	
	Estimated : nutritional : consumption : standard :	To meet : nutritional : consumption : standard :	Estimated : nutritional : consumption : standard :	To meet : nutritional : consumption : standard :	Estimated : nutritional : consumption : standard :	To meet : nutritional : consumption : standard :	Estimated : nutritional : consumption : standard :	To meet : nutritional : consumption : standard :	Estimated : nutritional : consumption : standard :	To meet : nutritional : consumption : standard :	Estimated : nutritional : consumption : standard :	To meet : nutritional : consumption : standard :
Latin America												
Argentina	211	211	311	228	228	270	- 42	- 42	246	246	285	- 39
Bolivia	4	20	1	9	21	1	8	20	10	23	1	9
Brazil	168	168	173	220	220	220	0	0	290	290	290	0
Chile	43	43	30	39	39	32	7	7	44	44	40	4
Colombia	64	64	57	71	71	36	35	35	79	79	54	25
Costa Rica	5	5	4	6	6	4	2	2	7	7	4	3
Cuba	15	15	1	13	16	1	12	15	18	18	1	17
Dominican Rep.	23	23	25	25	25	21	4	4	27	27	32	- 5
Ecuador	14	27	7	23	31	10	13	21	30	34	14	16
El Salvador	4	8	6	8	8	11	- 3	- 3	9	9	13	- 4
Guatemala	4	9	4	10	10	4	6	6	12	12	4	8
Haiti	2	26	1	16	28	1	15	27	23	30	1	22
Honduras	2	8	2	9	9	2	7	7	10	10	2	8
Mexico	242	242	252	300	300	300	0	0	350	350	350	0
Nicaragua	3	5	3	5	5	4	1	1	6	6	6	0
Panama	1	1	0	1	1	4	- 3	- 3	1	1	7	- 6
Paraguay	4	4	4	4	4	3	1	1	5	5	3	2
Peru	28	54	25	44	58	28	16	30	49	63	30	19
Uruguay	22	22	31	21	21	23	- 2	- 2	23	23	25	- 2
Venezuela	38	38	10	43	43	25	18	18	49	49	35	14
Other	72	72	55	78	78	62	16	16	83	83	71	12
Total	969	1,065	1,002	1,173	1,222	1,062	111	160	1,371	1,409	1,268	103
Canada	150	150	93	165	165	100	65	65	182	182	120	62
United States	2,195	2,195	3,635	2,350	2,350	4,390	- 2,040	- 2,040	2,535	2,535	5,135	- 2,600

Increases in farm output will continue to be hindered by lack of capital, credit, extension facilities, a faulty agrarian structure, inadequate marketing systems, and the one-commodity economies in many countries which make them largely dependent on exports. Vast improvement in education and technical services will be required before modern agricultural methods become generally adopted in the area.

The following tabulation shows 1958 consumption rates per person for wheat, dry beans and peas, nonfat dry milk, vegetable oil, and coarse grains with projections to 1962 and 1966. Projections include food and nonfood uses from both domestic production and imports. They allow for some expansion in domestic output; some improvement in marketing, transportation, and distribution; and economic growth which will raise purchasing power of lower-income groups:

<u>Commodity</u>	<u>1958</u>	<u>1962</u>	<u>1966</u>
	- - - Kilograms - - -		
Wheat	57.1	57.8	59.4
Dry beans and peas	15.8	15.8	15.9
Nonfat dry milk	.30	.41	.46
Vegetable oil	5.0	5.5	5.8
Coarse grains	121.5	118.7	118.4

The difference between the nutritional standard and the projected total consumption in 1962 and 1966 is equivalent to the following: For 1962, 2,714,000 tons of wheat and 49,000 tons of vegetable oil; and for 1966, 2,665,000 tons of wheat and 38,000 tons of vegetable oil.

The nutritional gap would be even greater if nutritional levels of below-average areas within the countries were raised to the standard, and the higher consuming areas remained the same. This is a problem, to some degree, in isolated rural areas throughout Central America and tropical South America. Typical areas include northeast Brazil and the densely populated highland areas of Ecuador, Peru, and Venezuela. These are extremely isolated areas, and cost of imported foods is prohibitive due to inadequate transportation, storage, and distribution facilities.

The rate of economic growth in the future will be an important determinant of the purchasing power of the population and the speed with which Latin America closes its nutritional gap. During most of the postwar period, the gross national product rose 2 percent per person per year, but the rate fell about half in the closing years of the 1950's. The bulk of the investment during this period came from domestic sources, though that percentage is now declining. While the United States was the largest supplier of foreign investment, large sums also came from other foreign governments and international agencies. Over the last 15 years, \$2.5 million of fixed capital were required for each \$1 million increase in national product in Latin America.

Foreign capital must play an ever greater part in the future if the trend in gross national product in Latin America is to continue upward at

the rate of the last decade. Commitments under the Latin-American Alliance for Progress Program, and loans and other assistance now offered through the Inter-American Development Bank and other institutions, promise to add substantial sums for investment in Latin America.

Establishment of free trade areas and economic integration programs in South and Central America during the past 2 years could lead to industrial specialization and greater exchange of goods among Latin American countries. This may help to accelerate economic growth and provide higher purchasing power for the people.

AFRICA AND WEST ASIA

Africa

Nearly all of the quarter billion people living in Africa have enough food, though the quality of the diet generally is not up to good nutritional levels and in some areas is far below. In the past, food production has increased with population since most people live on the land and produce most of their food or gather it from the wilds. In addition, production for export is expanding rapidly: Africa is a leading supplier of cocoa, oil palm products, peanuts, coffee, and cotton.

Fuller utilization of the continent's agricultural resources would have resulted in production sufficient to provide a much better diet in the past and would more than meet the food needs of the 39 million population increase projected from 1958 to 1966. Some improvement in diet is likely, but the obstacles that have hindered food output in the past are likely to prevent the continent's potential from being fully realized over at least the next 5 years.

The more important of these obstacles are the low educational level of rural people, low levels of investment and technology in agriculture, subsistence farming, and low purchasing power per person. Only 15 to 20 percent of Africans are literate, most of them in urban centers. This has made the problem of agricultural extension extremely difficult, and little modern technology is being employed in the basic agriculture of Africa. On the other hand, the best of technology is being used by growers of commercial export crops who have utilized the resources of the several fine agricultural experiment stations on the continent.

The African farmer has little capital investment. Irrigation works are important in North Africa and represent large capital inputs. Except in some areas farmed by Europeans, individual holdings tend to be rather small and often fragmented. Land is tribally owned in large areas.

Virtually no commercial fertilizer is used on subsistence crops in Africa. The continent produces only a little over 1 percent of the world's output, on a nutrient basis, and uses only about 3 percent. Commercial crops receive most of the fertilizer.

Economic incentives to increase production of food crops or to shift production among enterprises are generally lacking. Most African farmers consume much of what they produce. Even today, many bushmen buy nothing and sell nothing. Under these conditions, production changes little in response to price changes. Low purchasing power also limits the incentive to produce. Average per capita income is estimated at about \$100 per year. The bulk of this is confined to urban centers, and part of it goes for imported food-stuffs.

The situation is different for producers of export commodities. Guaranteed prices and other incentives have been used to increase production. The longterm output of these products also tends to be affected by changes in demand and prices.

The study indicates that Africa is a food-deficit continent with critical nutritional shortages in some areas. Food consumption meets nutritional standards in only two countries--the Republic of South Africa and the Federation of Rhodesia and Nyasaland.

Diets in Central and West Africa where starch root crops are important have sufficient calories. Calorie deficiencies show up principally in North Africa. Tunisia has the largest per-capita deficit. Although Egypt has a smaller per-capita deficiency, its total need for importing energy-giving grains (as measured by the difference between domestic production and consumption) is the greatest of any country in Africa.

The study indicates that animal protein is generally adequate in the diets in both North and South African countries, though shortages show up in areas where livestock raising is limited. Pulse protein deficits, like those in animal protein, occur in parts of Africa, principally in the heavy rainfall portions of West Africa. Nearby, pulses, especially peanuts, are produced in surplus quantities. Half of the countries indicating fat shortages are in North Africa; the others are scattered geographically.

Africa exports about three times as much agricultural products, on a value basis, as it imports. Exports averaged about \$3.4 billion annually during 1955-58. Such nonfood commodities as cotton, tea, tobacco, and hard fibers are the leading export items. Nearly all imports are for food. Grains and grain products are the leading imports, followed by sugar and dairy products. In 1958, imports supplied about 8 percent of the calories consumed in Africa.

Africa has great potential for expanding agricultural production, especially south of the Sahara where there are vast areas of unutilized and underutilized land, including large areas of grazing land. Only a few technological breakthroughs will be required to enable livestock production to expand greatly: Tsetse fly control is one; satisfactory transportation and marketing facilities are others. Soil, topography, and rainfall are ideal over large areas to expand production of tropical crops above already high levels. This also is an area of unsurpassed potential for hydroelectric development.

Egypt is the outstanding exception to the generally favorable longrange agricultural outlook because of limited crop acreage and a rapidly rising population. This is true, even when the potential benefits of the High Aswan Dam are considered. Agricultural expansion in Egypt depends directly upon irrigation; few other places in the world are as dependent upon irrigation water.

The chief block to technological improvement in African agriculture is illiteracy and lack of communication. As these improve, so will agricultural productivity. This is recognized by the newly independent countries of Africa in the increased emphasis they are placing on education. With so large an agricultural potential, it is reasonable to expect that subsistence agricultural output will move up with the population. Somewhat greater increases are indicated for several commodities.

Of the major food commodities, only wheat production is lagging behind population growth. Wheat is the biggest deficit item at present, and consumption is increasing throughout the continent. Wheat consumption in 1958 was about 2 million tons over African production. For 1966, import needs are projected at 3.8 million tons, reflecting some increase in per capita consumption, though not nearly enough to cover the nutritional gap. This situation indicates imports will continue to climb.

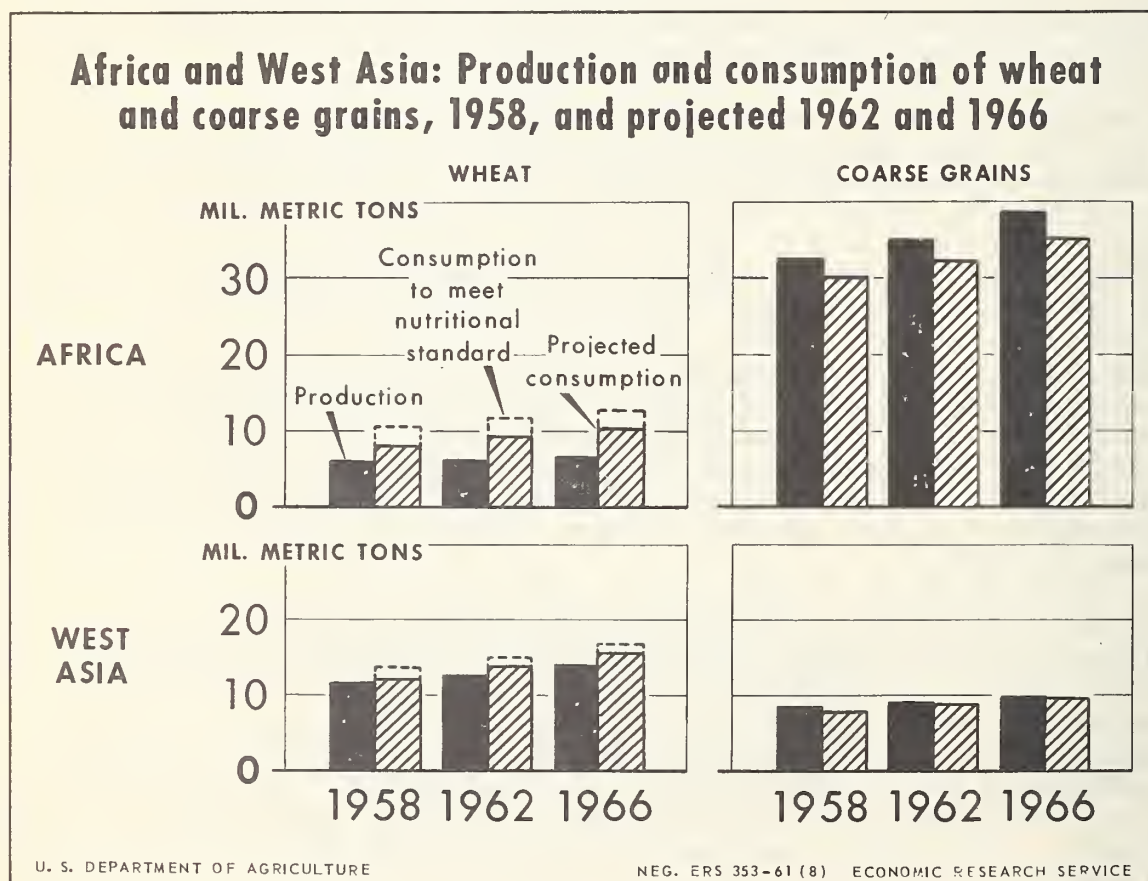


Figure 7

Production of coarse grains--basic foods in many parts of Africa--is expected to rise slightly faster than population, and consumption is expected to keep pace with population. This means that Africa may become a larger net exporter; exports may reach 3.5 million tons in 1966. In 1958, production exceeded requirements by 2.2 million tons. Export availabilities of vegetable oil will also increase, rising to 1.2 million tons in 1966 compared with 800,000 tons in 1958.

Consumption of food will increase over the next 5 years as urbanization increases and the economy improves. Per capita consumption of selected commodities in 1958 and as projected for 1962 and 1966 is shown below:

<u>Commodity</u>	<u>1958</u>	<u>1962</u>	<u>1966</u>
	- - - Kilograms - - -		
Wheat	33.0	35.6	36.6
Dry beans and peas	20.0	20.5	20.4
Nonfat dry milk	.02	.19	.31
Vegetable oil	7.1	7.7	7.9

Even though food consumption is increasing, the additional quantities needed to raise expected consumption to levels that would meet nutritional standards are so great it would be unreasonable to expect this gap to be filled by 1966. The gap for wheat has been placed at 2.4 million tons. For animal protein, the deficit is equivalent to about 65,000 tons of nonfat dry milk. Even though pulse protein and fat shortages prevailed in some African countries in 1958 and are projected into 1962 and 1966, the continent as a whole is a net exporter of beans and peas and vegetable oil.

There are several reasons why the nutritional gap is unlikely to be closed by 1966. First is the lack of foreign exchange with which to buy the needed foods. Second is the lack of commercial consumer demand, even if means could be devised to import the needed food. Problems of port-unloading facilities and inland transportation and distribution also are serious.

Substantial shipments of agricultural commodities to African countries under concessional terms, even grants, generally would be most acceptable to Governments of diet-deficit countries, particularly if the foods are to be used as payment of wages in kind in works programs. Governments generally are reluctant to establish within the countries free food distribution programs, except to meet natural catastrophes.

West Asia

Rainfall is limited over much of West Asia with grain production and livestock raising on semiarid land the most important farm enterprises. Over half the 80 million people in West Asia are in Turkey and Iran. Since World War II, population has increased slightly over 2 percent per year.

The area produces most of the food it consumes and exports sizable quantities of fruits and nuts, cotton, and tobacco. During 1955-58,

Table 10.--Wheat: Requirements, production, and import need or export availability, Africa and West Asia, 1958, and projected to 1962 and 1966

Country	1958					1962					1966				
	Requirements					Requirements					Requirements				
	Esti- mated	To meet nutri- tional con- sumption	Pro- duc- tion	Pro- duc- tion	Pro- duc- tion	For pro- jected con- sumption	To meet nutri- tional standard	For pro- jected con- sumption	To meet nutri- tional standard	For pro- jected con- sumption	For pro- jected con- sumption	To meet nutri- tional standard	For pro- jected con- sumption	To meet nutri- tional standard	For pro- jected con- sumption
Africa 1/	1,610	1,657	1,627	1,627	1,627	1,894	1,894	1,550	1,550	1,550	2,074	2,074	1,700	1,700	374
Algeria	44	145	16	16	16	39	151	14	14	14	54	158	14	14	144
Angola	58	1,022	8	8	8	68	1,095	0	0	0	92	1,173	7	85	1,166
Belgian Congo and Ruanda-Urundi	22	90	0	0	0	25	97	0	0	0	30	102	0	30	102
Cameroun	2,577	2,731	1,444	1,444	1,444	3,018	3,018	1,432	1,432	1,432	3,336	3,336	1,475	1,863	1,863
Egypt	120	326	120	120	120	155	319	120	120	120	155	332	115	40	217
Ethiopia	18	116	0	0	0	26	122	0	0	0	32	128	0	32	128
French Eq. Africa 2/	116	116	0	0	0	140	140	0	0	0	150	150	0	150	150
French West Africa	63	203	0	0	0	100	214	0	0	0	112	227	0	112	227
Ghana	4	120	0	0	0	9	125	0	0	0	12	133	0	12	133
Guinea	123	231	105	105	105	135	244	100	100	100	145	258	100	145	158
Kenya	3	48	0	0	0	5	50	0	0	0	7	51	0	7	51
Liberia	91	107	19	19	19	105	115	25	25	25	125	125	29	96	96
Libya	1,097	1,097	1,111	1,111	1,111	1,193	1,193	1,260	1,260	1,260	1,308	1,308	1,400	-92	-92
Morocco	57	57	0	0	0	70	70	0	0	0	75	75	0	75	75
Nigeria & British Cameroons	99	175	21	21	21	120	120	118	118	118	140	140	3	137	137
Rhodesia and Nyasaland, Fed. of	81	126	8	8	8	109	200	19	19	19	201	226	20	181	206
Sudan	35	51	0	0	0	42	134	12	12	12	59	142	14	45	128
Tanganyika	3	619	598	598	598	6	56	0	0	0	9	59	0	9	59
Togo	609	896	760	760	760	742	742	720	720	720	816	816	780	36	36
Turidia	896	1,405	15	15	15	989	989	720	720	720	1,082	1,082	750	332	332
Union of So. Africa	170	405	15	15	15	181	448	16	16	16	196	476	17	179	459
Other	7,896	10,437	5,854	5,854	5,854	9,171	11,536	5,998	5,998	5,998	10,212	12,573	6,424	3,788	6,149
Total	2,740	3,532	2,740	2,740	2,740	3,175	3,891	2,975	2,975	2,975	3,552	4,302	3,302	250	1,000
West Asia	1,060	1,221	1,118	1,118	1,118	1,222	1,372	1,195	1,195	1,195	1,392	1,534	1,339	53	195
Iran	330	330	63	63	63	366	366	50	50	50	396	396	53	343	343
Iraq	222	296	220	220	220	280	347	175	175	175	310	390	185	125	205
Israel	256	256	35	35	35	277	277	40	40	40	301	301	50	251	251
Jordan	616	739	607	607	607	768	768	835	835	835	853	853	935	-82	-82
Lebanon	6,395	6,395	6,500	6,500	6,500	7,130	7,130	7,055	7,055	7,055	7,956	7,956	7,856	100	100
Syria	425	800	125	125	125	475	825	150	150	150	525	850	175	350	675
Turkey	12,044	13,569	11,408	11,408	11,408	13,693	14,976	12,475	12,475	12,475	15,285	16,582	13,895	1,390	2,687
Other															
Total															

1/ Names and borders as they generally existed in 1958. 2/ Excluding Guinea.

Table 11.--Dry beans and peas: Requirements, production, and import need or export availability, Africa and West Asia, 1958, and projected to 1962 and 1966

Country	1958				1962				1966			
	Requirements				Requirements				Requirements			
	Esti- mated	To meet nutri- con- sumption	To meet nutri- duc- tion standard	Pro- duc- tion	For pro- jected con- sumption	To meet nutri- duc- tion standard	Pro- duc- tion	1,000 metric tons	For pro- jected con- sumption	To meet nutri- duc- tion standard	Pro- duc- tion	Import need or export availability (-)
Africa 1/	89	89	49		97	72	25		102	105	75	
Algeria	120	120	129		124	130	-6		130	130	140	
Angola												
Belgian Congo and Ruanda-Urundi	438	438	438		469	475	-6		503	503	520	
Cameroon 2/	58	76	58		81	66	10		82	85	72	
Egypt	327	327	311		361	344	17		384	399	360	
Ethiopia	388	388	430		421	490	-69		461	461	541	
French Eq. Africa	20	20	20		21	22	-1		22	22	24	
French West Africa												
2/ 3/	986	1,066	986		1,121	1,125	-4		1,183	1,183	1,185	
Ghana 2/	50	72	50		65	55	10		68	79	58	
Guinea	20	20	20		21	21	0		22	22	22	
Kenya	75	75	75		79	80	-1		84	84	85	
Liberia 2/	5	21	5		11	5	6		15	23	5	
Libya	9	18	9		7	7	0		11	21	11	
Morocco	33	33	94		36	86	-50		39	39	99	
Nigeria and British Cameroons 2/	1,131	1,241	1,131		1,310	1,325	10		1,391	1,406	1,380	
Rhodesia and Nyasaland, Fed. of	100	100	100		101	100	1		112	112	112	
Sudan	181	181	190		206	231	-25		232	232	262	
Tanganyika	221	221	234		234	248	-14		248	248	262	
Togo	8	8	8		9	9	0		9	9	9	
Tunisia	30	30	30		32	36	-4		36	36	41	
Union of So. Africa	68	68	78		75	72	3		82	82	79	
Other	405	430	405		450	435	15		490	500	470	
Total	4,762	5,042	4,850		5,326	5,395	-83		5,706	5,781	5,812	
West Asia												
Iran	154	154	155		170	169	1		187	187	185	
Iraq	75	75	75		83	83	0		92	92	92	
Israel	11	11	6		12	3	9		14	14	3	
Jordan	42	42	50		47	45	2		53	53	53	
Lebanon	7	7	3		8	3	5		8	8	4	
Syria	52	72	79		61	77	-16		69	69	80	
Turkey	479	479	507		534	559	-25		596	596	626	
Other	69	69	70		76	75	1		87	87	85	
Total	889	909	945		991	991	-23		1,106	1,106	1,128	

1/ Names and borders as they generally existed in 1958. 2/ Includes peanuts consumed as pulses. 3/ Excluding Guinea.

Table 12.--Nonfat dry milk: Requirements, production, and import need or export availability, Africa and West Asia, 1958 and projected to 1962 and 1966

Country	1958				1962				1966			
	Requirements :				Requirements :				Requirements :			
	Esti- mated	To meet : nutri- : tional	Pro- : duc- : tion	For pro- : jected : con- : sumption	To meet : nutri- : tional	Pro- : duc- : tion	For pro- : jected : con- : sumption	To meet : nutri- : tional	Pro- : duc- : tion	For pro- : jected : con- : sumption	To meet : nutri- : tional	Pro- : duc- : tion
	1	2	3	4	1	2	3	4	1	2	3	4
	108	10	10	10	139	5	45	134	151	6	81	145
Africa ^{1/}												
Algeria	0	0	0	2	3	0	2	3	3	0	3	3
Angola	0	0	0	0	0	0	0	0	0	0	0	0
Belgian Congo and Ruanda-Urundi	0	0	0	0	0	0	0	0	0	0	0	0
Cameroun	0	7	0	2	7	0	2	7	4	7	4	7
Egypt	0	0	0	10	10	0	10	10	11	12	0	11
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0
French Eq. Africa	0	0	0	0	0	0	0	0	0	0	0	0
French West Africa	35	0	0	5	37	0	5	37	10	39	0	10
Ghana	0	0	0	0	0	0	0	0	0	0	0	0
Guinea	0	8	0	4	8	0	4	8	9	0	8	9
Kenya	0	0	0	0	0	0	0	0	0	0	0	0
Liberia	0	5	0	2	5	0	2	5	4	6	0	4
Libya	0	0	0	1	1	0	1	1	1	1	0	1
Morocco	0	0	0	4	4	0	4	4	6	6	0	6
Nigeria and British Cameroons	0	37	0	5	40	0	5	40	15	42	0	15
Rhodesia and Nyasaland	1	1	0	3	3	1	2	2	3	3	1	2
Fed. of Sudan	0	0	0	1	1	0	1	1	1	1	0	1
Tanganyika	0	0	0	0	0	0	0	0	0	0	0	0
Togo	0	3	0	2	4	0	2	4	4	4	0	4
Tunisia	0	0	0	2	2	0	2	2	2	2	0	2
Union of South Africa	2	2	2	3	3	3	0	0	4	4	4	0
Other	1	10	1	4	11	1	3	10	11	12	1	10
Total	4	108	3	50	139	5	45	134	87	151	6	81
West Asia												
Iran	1	1	0	1	1	0	1	1	1	1	0	1
Iraq	2	2	0	2	2	0	2	2	2	2	0	2
Israel	1	1	0	1	1	3/	1	1	1	3/	1	1
Jordan	0	0	0	0	0	0	0	0	0	0	0	0
Lebanon	2	2	0	2	2	0	2	2	2	2	0	2
Syria	1	1	0	1	1	3/	1	1	1	3/	1	1
Turkey	2	2	0	2	2	0	2	2	2	2	0	2
Other	1	1	0	1	1	0	1	1	1	1	0	1
Total	10	10	0	10	10	3/	10	10	10	3/	10	10

^{1/} Names and borders as they generally existed in 1958. ^{2/} Excluding Guinea. ^{3/} Less than 500 metric tons.

agricultural exports averaged about \$560 million annually compared with agricultural imports of \$375 million per year.

Historically, West Asian farming has been generally characterized by large land holdings, though recently efforts toward a greater distribution of farmland have been made. Per-capita income averages only about \$175 per year for the area as a whole, which limits purchasing power.

Agricultural development has been hindered by low educational levels, but some improvement is occurring. About one-third of the people of West Asia can read and write. However, 90 percent in Israel and 65 to 80 percent in Lebanon are literate.

Agriculture is dominant in the economies of West Asian countries, though industrial development is beginning and oil is a substantial source of wealth in several countries. In general, limited agricultural technology leaves a large potential for further development. Fertilizer use is increasing and the U.N. Food and Agriculture Organization reports that the area now produces about 120,000 tons of plant nutrients per year.

Grains are produced on much of the cultivated land in West Asia. Including imports, they account for two-thirds of the total energy intake of the people. Sugar, fats, and oils account for about 15 percent. Fruit and vegetables also are important foods.

The daily per-capita energy intake for West Asia as a whole in 1958 averaged 2,365 calories, 35 below the nutritional standard. Some calorie shortage was indicated in four of the seven countries studied. About two-thirds of the energy intake in Israel, Lebanon, and Jordan was supplied by imported commodities in 1958, but the average for the area as a whole was only 12 percent. Imports are expected to contribute a higher percentage by the mid-1960's as increases in the domestic production of food are not expected to equal those in consumption. Per-capita consumption of selected commodities in 1958 and as projected for 1962 and 1966 is shown below:

<u>Commodity</u>	<u>1958</u>	<u>1962</u>	<u>1966</u>
	- - - Kilograms - - -		
Wheat	159.6	165.9	168.3
Dry beans and peas	12.0	12.1	12.1
Nonfat dry milk	.13	.15	.15
Vegetable oil	5.3	6.1	6.6

Consumption of protein meets nutritional standards, except for a minor pulse protein shortage in Syria. West Asia produces fairly large quantities of fats and oils but not enough to meet requirements. Use falls short of the standard in several countries.

Wheat is the basic food crop in the West Asian diet. The area is a net importer even though in some years several countries may be expected to export wheat. Although the area's production should increase over the next

several years, wheat requirements in 1966 are expected to exceed domestic production by 1.4 million tons, compared with about 625,000 tons in 1958. The increased shortage will reflect increased demand generated by economic development.

West Asia imports and exports coarse grains but is on a small net export basis. The net export position reflects large shipments of barley from Iraq. Consumption of coarse grains is increasing as the livestock and poultry industries develop. Import needs for milled rice have been projected at 125-150,000 tons annually for the next several years. Requirements for vegetable oil are increasing faster than production, with import needs projected at 232,000 tons for 1966--over twice that of 1958.

An estimated 1.3 million tons of wheat above projected consumption are needed to correct the calorie shortage in 1966. The fat shortage could be corrected by only 15,000 tons of vegetable oil because of the expected increases in both imports and domestic production.

Although the area has the physical capacity to produce a substantial part of the wheat required to correct calorie shortages, this does not appear likely. The additional land resources necessary are unlikely to be allocated to wheat, in view of the emphasis on export crops and other products. The United States is already supplying a substantial part of the area's wheat import requirements (as well as other food import requirements) under special programs. If this food gap is to be narrowed appreciably over the next 5 years, it will probably be accomplished by larger imports.

FAR EAST, COMMUNIST ASIA, AND OCEANIA

Far East

The Far East is the only major region of the world with an already dense population and a high rate of population growth. ^{1/} Almost half of the free people of the world--900 million--live in this area, and half of these are in India. The region's population growth rate is second only to that of Latin America, with some countries increasing more than 3 percent a year. Over the next decade the area will add more people than are now living in the United States.

Food production has been increasing since the serious disruption of World War II, rising an average of over 3 percent a year since 1953. However, the amount of food produced per capita has not yet regained prewar levels. Differences within the area are large. Production per person has increased 30 percent over prewar in Japan, barely kept ahead of population in India, and declined 10 percent in Indonesia and 20 percent in Pakistan.

^{1/} Japan is here included in the Far East although in the world analysis it was combined with the other industrialized countries of the world.

Agriculture's pattern of production in the Far East has been remarkably rigid for decades and in some countries for centuries. Each commodity has about the same relation to total agricultural production as a quarter century ago.

First and most obvious of the factors accounting for this rigidity are climate and soil. The warm, moist, monsoon climate of much of the area favors rice. Conditions are favorable for wheat and other temperate zone crops only in such areas as northern India, northern West Pakistan, Afghanistan, and Japan. Aside from physical factors, the ratio of population to agricultural land has the greatest influence on the production pattern. The region's average is one-third hectare per person, ranging from less than 0.1 hectare in Japan to nearly 0.5 in Burma.

The limited supply of land requires cultivation of crops with high caloric yields per hectare. Rice accounts for 40 percent of the value of all agricultural production in the Far East. Grains, sugar, roots, and tubers--all high in carbohydrates--account for two-thirds of farm production; pulses, fruits, and vegetables 10 percent; oil crops 10 percent; and nonfood crops 14 percent. Conversion of grains to livestock is too costly for most of the area. Only in Afghanistan is the livestock industry of relative importance, though Japan plans increased livestock production.

The abundance of cheap labor favors production of such labor-intensive crops as tea, silk, and rice. For the Far East as a whole, approximately 70 percent of the population is employed in farming, ranging from 35 percent in Japan to 95 percent in Laos. The rural population is largely illiterate. The proportion who can read and write is only 5 percent in Afghanistan, 15 percent in Pakistan, and 20 percent in India. At the other end of the scale, Japan is 95 percent literate.

Although the Far East devotes much of its agricultural resources to food production--from 94 percent in the most densely populated countries to 29 percent in Malaya--use of other capital inputs such as chemical fertilizer, irrigation, machinery, improved seeds, pesticides, and insecticides is low in all but a few nations such as Japan. India is applying only 1.4 kilos of fertilizer plant nutrients per hectare and Pakistan 0.5 kilo. This compares with 245 kilos in Japan and 75 in Western Europe. Large-scale irrigation is practiced in some countries, but much needs to be done to improve the efficiency of water utilization in most areas except Japan and Taiwan.

Yields per acre in the Far East, particularly for food crops, are among the lowest in the world, reflecting the low level of capital inputs in agriculture. However, variation within the region is large. Japan's per acre rice yield is about 3.5 times India's, and the difference is widening as yields in Japan are increasing far more rapidly than in India.

Economic incentives are almost totally lacking in many of the less-developed Far Eastern countries, reflecting subsistence production and low purchasing power. Much of the food produced is consumed on farms and only the residual is marketed. Consequently, production shows no appreciable response to changes in price.

Per capita income is extremely low in nearly every country, though it rose an average of 2 percent a year from 1955 to 1959. The present average of about \$80 per year for the Far East, excluding Japan, is lower than for any other region except Communist Asia, and is less than 4 percent of the U.S. level. Well over half of personal income is spent for food. This relation appears rather stable. Thus, future increases in income will strengthen demand for food.

Food consumption in the Far East follows closely the pattern of production. Over 65 percent of the caloric content of the diet comes from food grains, including grain sorghum and millets, about 13 percent from roots, tubers, and pulses. The result is a diet high in carbohydrates and low in protein and fats. Rice is the staple in most countries though wheat is important in India, Afghanistan, Pakistan, and Japan. Barley makes a substantial contribution to the diet in Korea and Japan, and corn in the Philippines and Indonesia.

Food balances constructed for 1958 for 11 countries with 94 percent of the region's population show that consumption per capita averaged 2,100 calories per day, lower than in any other region and 200 below the nutritional standard established for the Far East. Only Japan and Taiwan were above the standard.

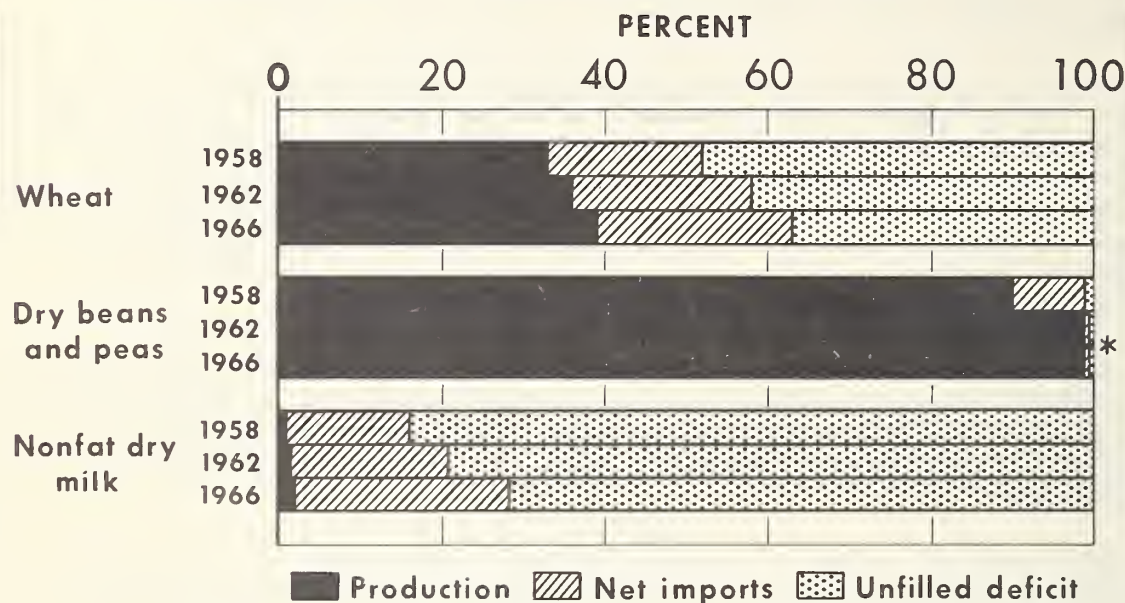
The regional weighted average food balance showed an animal protein deficiency of 1 gram per person per day, a pulse protein deficiency of one-tenth gram, and an "other" protein deficiency of 4 grams. The fat deficiency was 6 grams. In 1958, these deficits were equivalent to 20 million tons of wheat, 100,000 tons of dry beans and peas, 670,000 tons of nonfat dry milk, and 1.5 million tons of vegetable oil. Although deficits have been expressed in terms of these four commodities, substitute products could be utilized, as available, to meet these requirements.

The fat shortage is more pronounced in the Far East than in other regions, even though this region is a net exporter of vegetable oil. Diets in 7 of the 11 countries are short of fats, with Pakistan and South Korea consuming less than half the reference standard. The Japanese diet also is well below the fat standard, but the people do not accept such a level as necessary.

Consumption of animal protein appears adequate, on the average, in all countries except India and Indonesia. Consumption of pulses--mostly beans, peas and soybeans--is more than adequate in most countries, but below the recommended minimum in Malaya, Thailand, and Ceylon.

Fats and oils, along with animal protein, are among the most costly foods. The inadequate level of consumption reflects limited foreign exchange and low consumer purchasing power more than an actual shortage.

Far East: Production, net imports and unfilled deficit as percentages of requirements to meet nutritional standards for 1958, and projected 1962 and 1966



*IMPORTS 0.5 PERCENT AND UNFILLED DEFICIT 0.5 PERCENT IN 1962 AND 1966.

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Figure 8

Diets are deficient in some countries partly because foods are sold to purchase other necessities. Burma and Thailand export one-fourth to one-third of their rice production and greater shares of some minor crops. Ceylon and Malaya allocate more than half of their farm resources to such nonfood crops as rubber and tea. More than half a million tons of fish were exported in 1958, principally from Japan. Net exports of vegetable oil exceeded one million tons in that year.

The Far East is a net importer of over 10 million tons of food grains, largely wheat, whereas the area was a net exporter prewar. The region also imports substantial quantities of pulses, fruit and vegetables, and dairy products.

The pattern of consumption also has been relatively stable in the Far East. This results largely from the foods available and preferences. Religion also is a strong influence, particularly in India where Hindu beliefs forbid slaughter of animals. Religious precepts also prohibit consumption of certain animal products by Moslems.

Despite general stability, some shifts in consumption have been noted. Largely because of increased imports, wheat consumption has gained relative

to rice and other staples. Demand for animal products is rising sharply in a few countries; consumption of fats and oils also is increasing.

The food deficits of the Far East are much too large to be made up by imports. The great bulk must be filled by increased production within the region. A host of problems face the area: Rising population and a shrinking man-to-land ratio, widespread illiteracy and other social problems, low purchasing power, shortages of private and public facilities serving agriculture. These problems make it unlikely that production will increase enough to erase the deficits in the foreseeable future.

The area of cultivable land in the Far East is limited. While such countries as Burma, Thailand, and the Philippines can increase the area with little difficulty, others will not be able to maintain the present acreage. Meanwhile, population will continue to grow. Agricultural land per capita is projected to shrink from one-third hectare in 1959 to one-fourth hectare in 1975. However, increased multiple cropping offers added possibilities for increasing production. Japan has about 60 percent of its land under double cropping. Taiwan gets an average of two crops a year. But in India only 15 percent of the land is double cropped.

These projections indicate that the only real possibility of raising food production is to increase yields per acre through better management and larger capital inputs.

Increased use of fertilizer and irrigation in combination with other improved farming practices offers the greatest potential for raising yields. Current use is only a fraction of the practical potential. If application rates reached the Japanese level, total use for the rest of the region would increase 45-fold. While some increase is likely, the factors that have hindered fertilizer use in the past are likely to do so for some time to come. Chief among these are lack of production and distribution facilities, shortage of foreign exchange, inadequate knowledge on the part of farmers, instability of farm prices, and insecurity of tenure. India produced only 120,000 tons of nitrogen in 1960, and imports have averaged about 130,000 tons. The country plans to produce 1 million tons by 1966, but it is doubtful that all factories planned will be in production by that time. Even much larger quantities could be used to advantage.

Japan irrigates 96 percent of its rice crop, and in northern India, West Pakistan, Korea, and Taiwan irrigation is very important, but in most other countries of the area controlled irrigation is not widely practiced. While many countries have irrigation projects in the planning or construction stages, irrigation is not likely to increase enough to significantly reduce the food deficit.

Prospects for increased use of machinery, improved seeds, pesticides, and insecticides also are not promising. Factors likely to hinder such developments are lack of investment capital, widespread rural illiteracy, badly depleted soils, and lack of entrepreneurial ability.

Largest production gains over the next 5 years are likely in India where the potential is greater than in most of the Far East and where agricultural investments have been large. Pakistan, Ceylon, and Indonesia will find it difficult to raise production per capita. The agricultural potential in sparsely populated Burma, Thailand, Laos, Cambodia, and South Vietnam probably will not be fully realized as commercial export demand for rice is likely to continue to lag. Yields in the Philippines are expected to rise at only a slightly higher rate than population. Past rates of increase in Japan and Taiwan, where yields are high, are not likely to be maintained indefinitely.

Tables 14-17 project levels of consumption, production, and imports for wheat, dry beans and peas, nonfat dry milk, and vegetable oil for 1962 and 1966. These show production of wheat increasing 43 percent between 1958 and 1966. Pulse production will be up 50 percent and vegetable oil 24 percent. Japan is the only country producing any quantity of nonfat dry milk in the Far East and shows a one-third increase. A greater increase in production of wheat, dry beans and peas, and vegetable oil is shown between 1958 and 1962 than between 1962 and 1966, because of a poor crop year in 1958. The wheat index was 108 in 1958 compared to 117 in 1957, pulses were reduced 12 percent, and all crops except peanuts were down. Production of wheat is expected to increase 25 percent in India from 1962 to 1966, compared to 9 percent in Japan and 7 percent in Pakistan.

Requirements for projected consumption of the above four commodities for 1962 and 1966 indicate an improvement in the Far Eastern diet over the 1958 level. Annual per-capita consumption for these commodities, plus rice and coarse grains for comparison, in 1958 and as projected for 1962 and 1966 are as follows:

<u>Commodity</u>	<u>1958</u>	<u>1962</u>	<u>1966</u>
	- - - Kilograms - - -		
Wheat	27.5	31.4	33.9
Dry beans and peas	16.5	18.3	19.2
Nonfat dry milk	0.16	0.19	0.27
Vegetable oil	4.3	4.9	5.3
Rice	90.8	92.1	91.9
Coarse grains	41.1	41.1	42.2

Per-capita consumption of all food grains and pulses is projected to increase from 176 kilos in 1958 to 183 in 1962, and to 187 in 1966. India shows a substantial increase, from 180 kilos per capita of grains and pulses in 1958 to 194 kilos in 1966, up 8 percent. Pakistan and Indonesia will probably expand per-capita consumption of these foods only 3 and 2 percent respectively during the same period.

Consumption is increasing faster than production and, as a result, it is expected that imports of wheat will go up 50 percent between 1958 and 1966, and nonfat dry milk imports will more than double. Those countries which are net importers of vegetable oil will increase imports more than

Table 14.--Wheat: Requirements, production, and import need or export availability, Far East, Communist Asia, and Oceania, 1958 and projected to 1962 and 1966

Country	1958			1962			1966					
	Requirements :		Pro- duc- tion	Requirements :		Pro- duc- tion	Requirements :		Pro- duc- tion	Requirements :		Pro- duc- tion
	Esti- mated con- sump- tion	: To meet : nutri- : tional : stan- : dard		For pro- jected consump- tion	: To meet : nutri- : tional : stan- : dard		For pro- jected consump- tion	: To meet : nutri- : tional : stan- : dard		For pro- jected consump- tion	: To meet : nutri- : tional : stan- : dard	

Table 15.--Dry beans and peas: 1/ Requirements, production, and import need or export availability, Far East, Communist Asia, and Oceania, 1958 and projected to 1962 and 1966

Country	1958			1962			1966		
	Requirements :			Requirements :			Requirements :		
	Esti- mated con- sump- tion :	To meet: nutri- tional : stand- ard :	Pro- duc- tion :	To meet: nutri- tional : stand- ard :	Pro- duc- tion :	For : projected : consump- tion :	To meet: nutri- tional : stand- ard :	For : projected : consump- tion :	Import need or export availability (-)
----- 1,000 metric tons -----									
<u>Far East</u>									
Burma	200	200	300	220	340	-120	240	360	-120
Ceylon	70	144	9	80	10	70	91	11	80
India	11,000	11,000	9,800	13,500	13,500	0	15,300	15,300	0
Indonesia	460	460	460	500	500	0	540	540	0
Japan	470	470	400	480	400	80	490	400	90
Korea, South	25	25	25	27	22	5	30	23	7
Malaya	40	54	15	60	15	45	70	25	45
Pakistan	1,200	1,200	1,200	1,300	1,300	0	1,500	1,500	0
Philippines	188	188	185	220	220	0	250	250	0
Taiwan	25	25	24	30	26	4	32	34	-2
Thailand	84	105	92	130	140	-10	150	170	-20
Other	340	350	260	510	500	10	615	600	15
Total	14,102	14,221	12,770	17,057	16,973	84	19,308	19,213	95
<u>Communist Asia</u>									
	12,200	12,200	12,200	13,100	13,100	0	14,250	14,250	0
<u>Oceania</u>									
Australia	12	12	12	13	13	0	14	14	0
New Zealand	3	3	3	3	3	0	3	3	0
Other	5	5	5	5	5	0	5	5	0
Total	20	20	20	21	21	0	22	22	0

1/ Excludes soybeans and peanuts.

Table 16.--Nonfat dry milk: Requirements, production, and import need or export availability, Far East, Communist Asia, and Oceania, 1958 and projected to 1962 and 1966

Country	1958					1962					1966				
	Requirements :					Requirements :					Requirements :				
	Esti- mated con- sump- tion	: To meet : nutri- : tional : stan- : dard	: Pro- : duc- : tion	: To meet : nutri- : tional : stan- : dard	: For : pro- : jected : consump- : tion	: To meet : nutri- : tional : stan- : dard	: Pro- : duc- : tion	: For : pro- : jected : consump- : tion	: To meet : nutri- : tional : stan- : dard	: For : pro- : jected : consump- : tion	: To meet : nutri- : tional : stan- : dard	: For : pro- : jected : consump- : tion	: To meet : nutri- : tional : stan- : dard		
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three times, while oil exports will expand only slightly. Imports of dry beans and peas will remain almost constant, indicating the balance in pulse protein consumption.

The gap between requirements to meet the nutritional standard and projected consumption in 1962 is equivalent to 20 million tons of wheat, 1.6 million tons of vegetable oils, 81,000 tons of dry beans and peas, and 715,000 tons of nonfat dry milk. For 1966, the magnitude of the deficits declines slightly.

It is highly unlikely that the Far East will import enough food to bridge the gap between domestic production and the nutritional standard by 1966. Limited foreign exchange will make it impossible for many countries to import the necessary quantities, particularly with the emphasis on imports of capital goods for industrial development. Some of these commodities may be imported, principally from the United States, under some concessional arrangement. However, quantities of dry beans and peas, nonfat dry milk, and vegetable oil available for these programs are limited. Although the U. S. has large supplies of surplus wheat, individual consumers must pay for their purchases and low incomes limit the quantities they can buy. Also, people have to learn to prepare and eat these "new" foods.

Other limitations are unloading facilities at ports, storage, processing establishments, and transportation. In India, port-handling capacity can only be expanded to 500,000 tons of grain per month in the near future. Storage is being doubled in India, but the 2.5 million tons available in 1960 was overfilled and forced a reduction in grain imports. Inland transportation systems in most countries are so inadequate that local shortages can exist while national stocks are available.

Continued outside financial and technical assistance will be necessary for Far Eastern agriculture. Such assistance will be spread thinly over 100 million or more farmers. Furthermore, the social, psychological, and institutional changes necessary and the reluctance of the peasants to alter their ways are formidable barriers.

In summary, Far Eastern agriculture will be hard pressed to maintain current consumption levels, and the existing gap between production and consumption will widen. Some progress has been made in improving diets through imports, and the Far East will probably consume 4.5 million more tons of wheat in 1962 than would have been consumed if the 1958 level of consumption were only maintained. This is indicative of the success of the U. S. Food for Peace Program in feeding hungry people in the less-developed areas of the world. However, total imports represent less than 10 percent of total consumption, and the huge deficit in the diet of the Far East must be made up through improved production within the countries themselves.

Communist Asia

The agricultural situation in Mainland China has deteriorated badly since 1958. In that year, before the communalization of agriculture,

production probably was 10 percent higher than in the more nearly normal year of 1957. The intake of calories probably has dropped from around 2,200 per person in 1958 to below 2,000. Avoiding starvation has become the number one problem of the Communist regime.

Mainland China's agriculture is so confused and chaotic that it is not possible to project production or imports for the next 5 years with any degree of reliability. Nevertheless, rough estimates have been made to fill in the world picture.

Production in 1962 would have to be 7.4 percent above 1958, and 16.5 percent above in 1966, to maintain the same per-capita caloric intake for the increasing population. However, production has declined since 1958, and poor crop prospects for 1961 indicate low supplies for the first half of 1962. Intentions to import 2 to 3 million tons of grain have been indicated, but still there will remain a critical deficit in 1962.

The regime is struggling to correct some of its mistakes and to stave off disaster, but it is unlikely that it can do so on any sound and lasting basis. Population is expected to increase faster than food supplies. Communism's ineptness in handling farm problems and farm people is expected to retard farm production.

There is little possibility that the amounts needed to bridge the nutritional gap will be imported. The Government will likely continue its policy of providing only enough food to permit the population to carry a heavy work program and to maintain discipline. The country is not likely to become a net importer, except to avoid famine.

Even less is known about production and consumption in other Communist Asian countries. Per-capita deficits similar to those of Mainland China are projected for North Korea, North Vietnam, and Outer Mongolia.

Oceania

Australia and New Zealand, as surplus producers of farm products, maintain high levels of domestic consumption and export large quantities of wool, dairy products, and meats. Australia is also a major exporter of wheat.

Both countries depend on farm exports for the bulk of their overseas earnings, and both are expected to continue to emphasize maximum agricultural production and exports for the next several years. Increased investment is expected for transport facilities to expedite movement of products to market and for opening underdeveloped areas to farming and rural settlement. Greater emphasis on industrial development in both areas may affect the actual volume of commodities available for export during the next 5 years.

Australia and New Zealand are among the best fed nations in the world with per-capita consumption averaging about 3,300 calories per day. With the exception of sizable wheat deficits in New Zealand, the only other agricultural deficiencies noted in these countries are vegetable oil, cotton,

and tobacco. There is no total fat deficit in the diet as vegetable oil shortages are offset by above-average animal fat consumption.

Diets of the population of the islands of the South and Western Pacific appear deficient in animal and "other" protein, but provide sufficient energy to meet the nutritional standard. Substantial imports of rice, canned meat, and wheat flour will continue necessary to maintain this level of consumption in certain areas.

WESTERN EUROPE

About 308 million people are living in the 16 countries of Western Europe (excluding Iceland, Luxembourg, and other smaller countries) with a total area of arable land about three-fifths that of the United States. Agricultural production has risen rapidly during the postwar period, and the area supplies nearly three-fourths of its food requirements. Expanding economic activity and high purchasing power have enabled imports of foods needed in excess of production. West European diets are more than adequate in major nutrients, except in some local areas, and are likely to continue so for the next several years.

Agricultural production had recovered from the disruption of World War II by about 1950. It rose about 17 percent between 1950 and 1958 compared with a population increase of about 6 percent. Western Europe's agriculture in 1957-58 produced one-fourth more than before the war on slightly less agricultural land and with more than one-fifth less labor. The area was nearly 75 percent self-sufficient in food by the end of the 1950's compared with 69 percent just before the war.

This great increase in agricultural output was largely due to substantial improvements in technology. This involved substantial increases in application of fertilizers, development of mechanization even on small farms, improved cultural practices, improved strains of both seeds and livestock, and remarkable advances in the development and use of pesticides.

The improvement in agricultural technology was supported by many factors: A generally high educational level of farm operators and workers, financial incentives in the form of favorable price-cost relationships, the availability of technical advice, and improved credit facilities necessary for purchase of capital equipment and fertilizer.

The majority of farms in Western Europe are family-operated. Most are owned by operators, though in some areas renting is significant. Average size ranges from a high of about 65 acres in the United Kingdom to about 8 or 9 acres in Greece.

The proportion of working population engaged in agriculture is probably nearly 25 percent for the area as a whole, varying from 5 percent for the United Kingdom, to about 40 percent for the Mediterranean area. France, the largest agricultural producer, has about 25 percent of its working population on farms. Sharp reductions in the number of workers on farms has occurred recently in response to the booming demand for employment in

industrial, commercial, and service industries. The Agricultural Census in West Germany indicates a decline of about one-quarter in the number of family workers, and nearly two-thirds in hired workers on farms between 1950 and 1960. The bulk of these adjustments took place on small farms.

Government programs have a major impact on agricultural prices, incomes, production, and imports in Western Europe. Nearly every country has import controls -- tariffs, equalization fees, or quantitative restrictions -- but the degree of control varies by country and by commodity. Government trading and trade monopolies in agricultural commodities are widespread, particularly in France, Germany, Austria, and Switzerland. Fixed or controlled prices for selected products are a general feature in Western Europe, but direct deficiency payments to producers are important only in the United Kingdom. Producer subsidies, predominantly for small farms or those in unsatisfactory locations, are administered in a number of countries where such input items as fertilizer, machinery, and motor fuel are widely subsidized. Western Europe produces about 40 percent of the world output of nitrogen, phosphoric acid, and potash, and consumes a very large part of its own production.

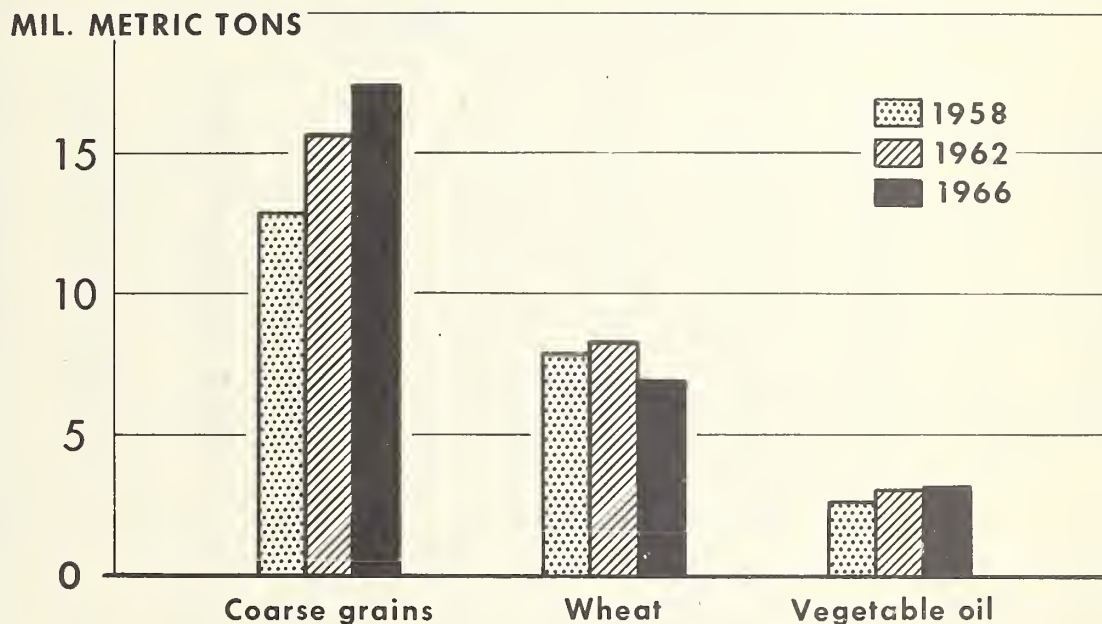
Labor productivity in agriculture increased about 4 percent per year between 1950 and 1955, despite the small size of farms, scattered small holdings, and outmoded farm buildings. The greatest increase occurred in the first half of the 1950's, though productivity continued to rise from 1956 to 1960. The number of tractors in Western Europe increased from about 200,000 before the war to 2.6 million in 1958, when there was one tractor for each 90 acres of cropland. By countries, this ranged from 30 acres per tractor in West Germany to more than 1,500 in Portugal. Substantial increases also have occurred for other types of mechanized equipment such as milking machines and equipment for lifting of root crops, silage making, and handling and feed mixing. The increase in production efficiency has no parallel in Western Europe's history. It is similar to the experience of U. S. agriculture over the past 2 decades.

The dietary level in Western Europe as a whole has been fully adequate in terms of calories, protein, and fats for several years. Although diets of some parts of the population in Spain, Portugal, Greece, and Italy probably were inadequate in animal protein, the number of calories consumed probably were adequate in virtually all parts of the area.

Western Europe is the richest and most concentrated import market for agricultural commodities in the world. By and large, the countries in this area have both the foreign exchange reserves and consumer purchasing power to pay for the imports of food and feedstuffs above what they are capable of producing.

Most of these countries import substantial quantities of feedgrains and oilcake to produce livestock products--the chief source of farm income in Western Europe. Imports of feedstuffs, especially feedgrains and oilcake, are likely to increase in the future because of the expected increase in livestock numbers. Projections of population and consumption, together with estimates of domestic production of livestock products, indicate imports of coarse grains will increase as much as 1.7 million tons between 1962 and 1966.

Western Europe: Net imports of coarse grains, wheat, and vegetable oil 1958, and projected 1962 and 1966



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Figure 9

Since population is concentrated and the agricultural area limited, Western Europe has been a major importer of food grains, chiefly wheat. However, wheat imports are likely to decline perhaps 1.4 million tons by 1966 because of the general upgrading of the diet underway in all West European countries. Domestic production of oilseeds is negligible, and the area as a whole will continue as a large importer of oilseeds and vegetable oil.

Per-capita consumption of meat is estimated to increase approximately 1.3 percent, or about 1.5 pounds, annually. Total consumption, after allowing for per-capita and population increases, will likely increase around 300,000 metric tons annually. Consumption of cereals as food is expected to decline, with the result that caloric intake for the region as a whole will increase only slightly. However, a larger proportion of wheat will be used as feed, and thus per-capita utilization of wheat will increase slightly.

Supplementary feeding programs are expected to be continued on a diminished scale for the next several years, particularly in Southern Europe. In that area, improvements in diet may be limited by slow growth in per-capita real income, particularly in Spain and Portugal. But by and large, Western

Table 18.--Wheat and dry beans and peas: Requirements, production, and import need or export availability, Western Europe, 1958 and projected to 1962 and 1966

Commodity and country	1958		1962			1966		
	Estimated : consump- tion :	Produc- tion :	Estimated : consump- tion :	Produc- tion :	Import need : or export : avail- : ability (-)	Estimated : consump- tion :	Produc- tion :	Import need : or export : avail- : ability (-)
	-----		-----1,000 metric tons-----			-----		
<u>Wheat</u>								
Austria	790	574	805	635	170	820	735	85
Belgium	1,200	751	1,207	810	397	1,206	795	411
Denmark	428	273	382	332	50	430	351	79
Finland	420	177	450	350	100	460	350	110
France	8,860	11,110	9,650	11,340	- 1,690	10,000	12,690	- 2,690
Germany, West	5,876	3,843	6,080	4,750	1,330	6,150	4,750	1,400
Greece	1,659	1,720	1,740	1,700	40	1,785	1,730	55
Ireland	602	520	565	445	120	555	435	120
Italy	9,168	8,480	9,220	8,800	420	9,600	9,300	300
Netherlands	1,392	393	1,501	525	976	1,509	516	993
Norway	358	30	373	21	352	375	20	355
Portugal	710	797	745	545	200	770	680	90
Spain	4,585	4,900	4,692	4,242	450	4,834	4,734	100
Sweden	703	711	768	768	0	823	791	32
Switzerland	654	291	685	320	365	692	313	379
United Kingdom	7,817	2,726	7,935	2,890	5,045	8,070	2,970	5,100
Total	45,222	37,296	46,798	38,473	8,325	48,079	41,160	6,919
<u>Dry beans and peas</u>								
Austria	10	5	10	5	5	10	5	5
Belgium	43	37	43	38	5	43	41	2
Denmark	16	21	16	15	1	16	15	1
Finland	16	13	16	9	7	16	9	7
France	275	230	280	220	60	280	225	55
Germany, West	173	80	145	65	80	125	60	65
Greece	104	96	109	91	18	112	94	18
Ireland	4	2	4	3	1	4	3	1
Italy	865	880	875	865	10	885	910	- 25
Netherlands	52	126	55	120	- 65	58	124	- 66
Norway	8	1	9	0	9	9	0	9
Portugal	108	111	111	114	- 3	115	117	- 2
Spain	647	650	770	785	- 15	770	800	- 30
Sweden	35	37	15	13	2	15	12	3
Switzerland	14	0	14	0	14	15	0	15
United Kingdom	324	180	320	135	185	315	120	195
Total	2,694	2,469	2,792	2,478	314	2,788	2,535	253

Table 19.--Nonfat dry milk and vegetable oil: Requirements, production, and import need or export availability, Western Europe, 1958 and projected to 1962 and 1966

Commodity and Country	1958		1962			1966		
	Esti- mated con- sumption :	Pro- duction	Esti- mated con- sumption :	Pro- duction	: Import need or export avail- ability (-)	Esti- mated con- sumption :	Pro- duction	: Import need or export avail- ability (-)
----- 1,000 metric tons -----								
<u>Nonfat dry milk</u>								
Austria	3	1	4	1	3	5	1	4
Belgium	25	25	40	40	0	50	50	0
France	35	38	62	80	- 18	90	110	- 20
Germany, West	70	63	110	100	10	130	123	7
Greece	3	0	3	0	3	3	0	3
Ireland	0	0	0	0	0	0	0	0
Italy	14	5	24	10	14	35	15	20
Netherlands	20	32	55	65	- 10	60	75	- 15
Portugal	4	2	9	3	6	9	5	4
Spain	34	3	25	5	20	29	9	20
Switzerland	5	5	9	12	- 3	20	25	- 5
United Kingdom	75	30	100	40	60	125	50	75
Total	288	204	441	356	85	556	463	93
<u>Vegetable oil</u>								
Austria	71	4	72	5	67	78	6	72
Belgium	108	5	113	4	109	120	3	117
Denmark	58	2	60	4	56	62	4	58
Finland	26	2	27	6	21	28	6	22
France	590	80	615	75	540	635	75	560
Germany, West	722	23	756	40	716	760	45	715
Greece	151	200	162	160	2	178	170	8
Ireland	14	0	14	0	14	14	0	14
Italy	568	443	660	370	290	705	380	325
Netherlands	217	7	235	6	229	248	6	242
Norway	34	0	35	0	35	50	0	50
Portugal	123	112	125	95	30	142	106	36
Spain	467	360	540	400	140	570	420	150
Sweden	91	63	85	60	25	86	60	26
Switzerland	59	2	67	4	63	75	4	71
United Kingdom	723	0	715	0	715	705	0	705
Total	4,022	1,303	4,281	1,229	3,052	4,456	1,285	3,171

Europe during the next 5 years will enjoy not only a relatively satisfactory diet, but an improved diet as per-capita real incomes rise.

EASTERN EUROPE

Eastern Europe, which includes the Soviet Union and other countries of the European Soviet Bloc, and Yugoslavia, had about 11 percent of the world's population and accounted for more than 14 percent of the world's agricultural production in 1958. The Soviet Union alone accounted for one-tenth of world output. The per-capita food supply generally exceeded the nutritional standards, though diets of considerable segments of the population in the area are inadequate.

Analysis of East European agriculture is necessarily tentative. Official data are often unreliable or lacking. In this study, it was often necessary to make adjustments or substitute judgments in the absence of firm data.

Indications are, however, that the trend in agricultural production in the 1950's was upward and at a more rapid pace than population growth. The increase has been slowed by collectivization and other Communist economic policies. It also has been less rapid than planned.

Eastern Europe has a large land area with soils well suited for agricultural production, but climate has been a limiting factor in expanding output. With the exception of Poland and Yugoslavia, the once predominant small peasant farming has been largely collectivized or far advanced toward this Communist goal. Since 1950, there has been a trend toward more state farms and amalgamation of collective farms into larger units. Soviet farms, particularly, are gigantic: In 1960, the average collective farm included 6,785 sown acres, the average state farm 22,485 sown acres. Farm mechanization and other capital inputs into East European agriculture are low compared to the industrialized countries of the West; productivity of farm labor also is low. An estimated 45 percent of the Soviet labor force is engaged in farm production, as compared to only 8 to 10 percent in the United States. In recent years, however, more capital has been allocated to agricultural development in the East European economies.

Except in East Germany and Czechoslovakia, diets in Eastern Europe have long been dominated by starchy foods, mainly cereals and potatoes. Consumption of dairy products, meat, fats, fruits, and vegetables has been low. Food shortages are frequent, particularly of meat, dairy products, and fat. Faulty distribution, poor harvests, intensified collectivization drives, and other political difficulties contribute to such shortages. For example, the poor harvest in East Germany in 1961 was aggravated by collectivization and the flight of large numbers of people to the West before the East German border was sealed. Nevertheless, growing urbanization and some increase in purchasing power during the post-Stalin era have resulted in a gradual shifting in the diet from grains to animal protein and other nongrain food. Food grain consumption also has been shifting from rye and corn to wheat.

Grain exports from the Soviet Union in recent years have increased substantially over prewar, though the bulk goes to East Germany, Czechoslovakia, and other East European countries which have become deficit in grain. Eastern Europe as a whole has become a net importer of fats and oils.

Population increases of 13 percent for the Soviet Union and 11 percent for the entire region are expected between 1958 and 1966. Growing urbanization and increased industrialization will encourage greater consumption of animal products and other nongrain foods.

Taking the area as a whole, combined per capita consumption of the three principal food grains -- wheat, rye, and corn -- probably will decrease about 5 percent by 1966 as compared with 1958-59. While per-capita consumption of wheat will increase slightly, it will be more than offset by decreases in rye and corn. Declines in corn consumption will be significant in the Danubian countries, whereas the important decreases in rye consumption will be in the Soviet Union and the northern countries.

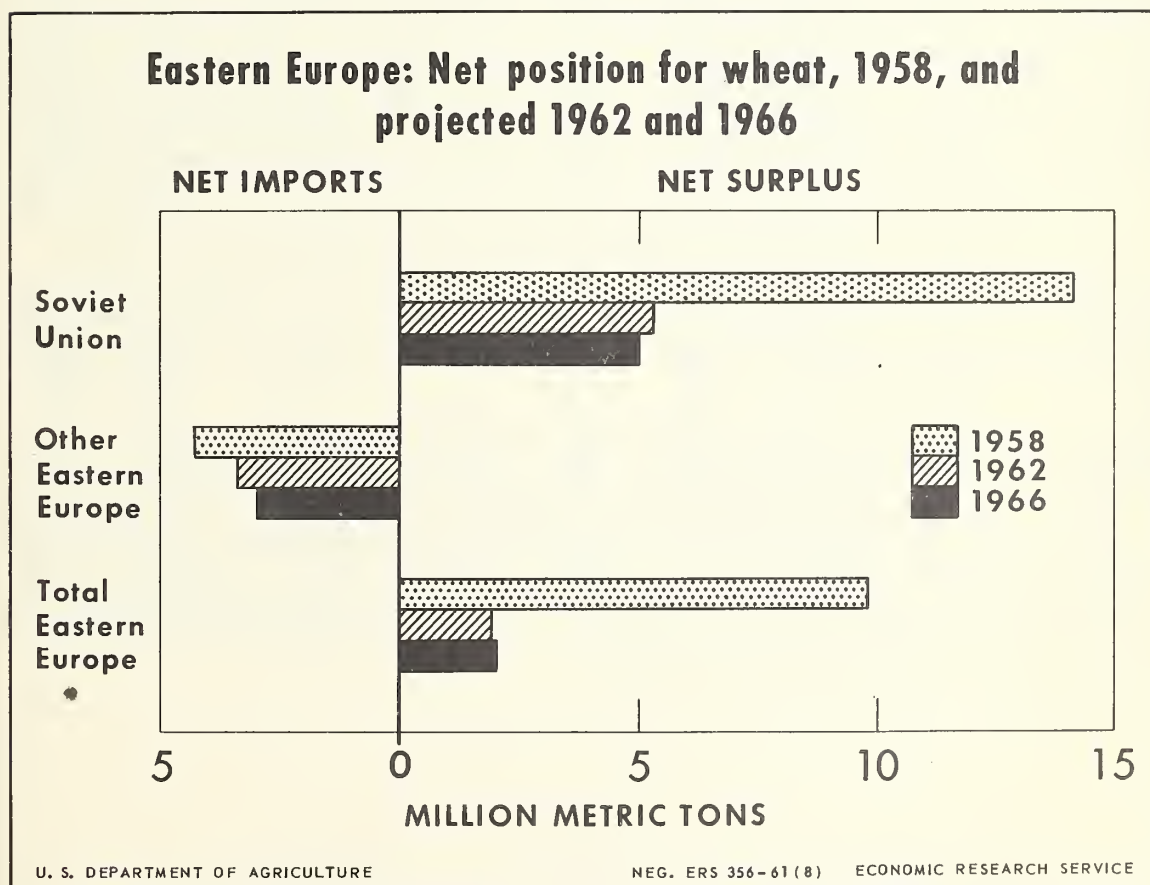


Figure 10

Table 20.--Wheat, dry beans and peas, and vegetable oils: Requirements, production, and import need or export availability, Eastern Europe, 1958 and projected 1962 and 1966

Commodity and country ^{1/}	1958		1962			1966		
	Estimated : consump- tion :	Produc- tion :	Estimated : consump- tion :	Produc- tion :	:Import need : or export : avail- : ability (-)	Estimated : consump- tion :	Produc- tion :	:Import need : or export : avail- : ability (-)
	-----		----- 1,000 metric tons -----			-----		
<u>Wheat</u>								
Bulgaria	2,062	1,967	2,155	2,065	90	2,230	2,230	0
Czechoslovakia	1,986	1,541	2,515	1,515	1,000	2,570	1,570	1,000
Germany, East	2,300	1,283	2,320	1,300	1,020	2,325	1,400	925
Hungary	1,703	1,487	1,950	1,850	100	2,000	2,000	0
Poland	3,666	2,322	3,550	2,360	1,190	3,650	2,450	1,200
Rumania	3,089	2,914	3,245	3,500	- 255	3,460	3,660	- 200
Soviet Union	48,720	2/62,800	49,085	54,400	- 5,315	51,640	56,620	- 4,980
Yugoslavia	3,459	2,450	4,007	3,707	300	4,200	4,100	100
Total	66,985	76,764	68,827	70,697	- 1,870	72,075	74,030	- 1,955
<u>Dry beans and peas</u>								
Bulgaria	47	59	56	88	- 32	61	96	- 35
Czechoslovakia	31	29	20	20	0	20	20	0
Germany, East	70	57	25	25	0	20	20	0
Hungary	50	60	64	67	- 3	67	74	- 7
Poland	66	66	120	120	0	130	125	5
Rumania	104	130	115	145	- 30	120	145	- 25
Soviet Union	1,115	1,100	2,400	2,400	0	3,500	3,500	0
Yugoslavia	175	125	192	212	- 20	200	222	- 22
Total	1,658	1,626	2,992	3,077	- 85	4,118	4,202	- 84
<u>Vegetable oils</u>								
Bulgaria	59	60	62	69	- 7	67	75	- 8
Czechoslovakia	140	60	155	70	85	165	75	90
Germany, East	242	65	245	70	175	250	75	175
Hungary	19	26	24	35	- 11	30	35	- 5
Poland	99	29	125	45	80	155	60	95
Rumania	100	70	111	120	- 9	120	120	0
Soviet Union	1,695	1,590	1,790	1,540	250	1,950	1,750	200
Yugoslavia	67	29	93	53	40	114	70	44
Total	2,421	1,929	2,605	2,002	603	2,851	2,260	591

^{1/} Does not include nonfat dry milk because data are unavailable; production insignificant.

^{2/} 1958 was a record crop year for the Soviet Union.

Present and planned emphasis on livestock production indicates that per-capita meat consumption may be expected to increase in 1966 by about one-sixth throughout Eastern Europe. The per-capita consumption of fats and oils also is expected to increase, reflecting mainly an increase in vegetable oil consumption of about 15 percent.

Projected increases in production and consumption are much more moderate than the official goals. The Soviet Union is seeking a 70 percent increase in production from 1958 (a record crop year) to 1965. A 70 to 80 percent increase is planned by Rumania between 1959-1965. Historical experience, climate, and institutional limitations make such expansion unlikely. The short growing season and limited moisture supply in much of Eastern Europe, especially in the Soviet Union, are serious obstacles to improvement in yields. Past expansion of production resulted primarily from large additions to acreage. Over 100 million acres of virgin land have been brought under cultivation with the aid of tractors beyond the Volga and the Urals since 1953, but much of it is marginal from the climatic standpoint. Such a large expansion is unlikely during the next 5 years.

In 1962, the region as a whole is expected to continue to have moderate surpluses in production of wheat, pulses, meat, eggs, and cheese over projected consumption. Almost all of the projected wheat surplus is in the Soviet Union. Deficits are expected for other East European countries, except Rumania which is expected to have a small surplus. A small deficit in feedgrains and rice and a sizable deficit in vegetable oil also are indicated. By 1966, the wheat surplus may increase slightly and the feedgrain deficit may decrease.

The projections assume average weather conditions. Since weather fluctuates sharply from year to year in Eastern Europe, crop production may vary considerably from that assumed. Even small changes in yields per acre could result in substantial changes from projected levels of production and consumption.

Use of surpluses for export or stockpiling will depend upon the policies of the Communist governments which have a complete monopoly of foreign trade. For climatic and strategic reasons, considerable importance is attached by East European Governments to stockpiling. Distribution of exports as between Bloc countries and the Free World also will be determined by Government decisions which take into account politico-economic objectives as well as commercial considerations.

APPENDIX

METHODOLOGY

Assumptions

The study rests upon the following basic assumptions: No large-scale war, but defense expenditures in the most important countries at current ratios to national income. No major cyclical depression anywhere; near-full employment in the industrial countries to be maintained, economic development in underdeveloped countries to accelerate. No major inflation on a world scale, but general price levels tending upward. Continued growth of real per-capita income in most areas. Population growths as estimated by ERS based upon United Nations and other sources. Continuation of present policies of agricultural protection in importing countries and agricultural promotion in exporting countries. No substantial changes in price relationships among products. Export supplies from the United States to be available at competitive prices.

Statistical Bases for the Calculations

Statistical bases for the calculations of this study include the food balance estimates recently prepared and published by the Foreign Agricultural Service of the Department of Agriculture for some 80 Free World countries and similar estimates published earlier or now under study and further refinement for the countries of the Communist Bloc. Also included are Foreign Agricultural Service estimates of world agricultural production by country for the 1950's and earlier years.

The food balance estimates, some of them now slightly revised, summarize in statistical form the food supply situation of a country or an area by commodity or groups of commodities for the consumption year 1958. In accordance with accepted procedures, they show domestic production, plus imports, minus exports, plus or minus changes in stocks, and the total supply available for all uses. From this total supply by commodity or group of commodities are deducted seed, feed, and industrial uses; a further deduction is made for wastage and processing from the stage of production to the retail stage. This leaves a total supply available for human consumption, which is then broken down on the basis of population numbers into kilograms available per year per capita, and into calories available per day per capita.

Incompleteness, unreliability, and lack of basic data are the major handicaps in compiling food balances. Many countries, for example, report only part of their food production, and few report stocks or utilization of supplies. To present a reasonably complete picture of food supplies, it has often been necessary to fill in gaps with estimates based on fragmentary information from scattered sources. Consequently, consumption levels for individual foods and for all foods combined as indicated in the balances must be regarded as rough approximations.

Nevertheless, these consumption level estimates are believed to point with a fair degree of accuracy to the countries which have nutritional deficiencies, and to provide a reasonably good starting base for calculating the order of magnitude of amendments needed in the world food budget to bring it up to acceptable levels.

Nutritional Reference Standards

In addition to these statistical bases, this world food budget required nutritional reference standards for countries and regions against which consumption could be measured to determine deficits.

Reference standards for calories are based on requirements as developed by the Food and Agriculture Organization of the United Nations for 36 countries and published in the FAO Second World Survey, 1952. These requirements represent physiological needs for normal activity and health taking account of environmental temperature, body weights, and the distribution by age and sex of the national populations. Calorie requirements by country were weighted to provide average reference standards by regions. The standards, given below, reflect regional variations in climates, body sizes, and proportion of adults and children. As derived, however, they are at best only rough guides and obviously make no allowance for inequities in distribution of food among population groups within countries.

<u>Country or area</u>	<u>Calories</u>
Canada	2,710
Latin America	2,500 (based on 9 countries)
Mediterranean Europe	2,430 (based on Italy and Greece)
Other Western Europe	2,635 (based on 8 countries)
Soviet Union	2,710
Other Eastern Europe	2,635 (average for Other Western Europe)
West Asia	2,400 (requirement for Turkey)
Africa	2,375 (based on 6 countries)
Far East	2,300 (based on 5 countries)
Communist Asia	2,300 (average for Far East)
Australia	2,640
New Zealand	2,670
United States	2,640

Each of these calorie level requirements includes a 15-percent allowance above physiological needs, representing loss between the retail level and consumption in the home. They can thus be compared with the calculations of consumption as shown in the food balances, where account already has been taken of loss from the stage of production to the retail stage.

Next to calories, protein in the diet is the most basic nutritional need. Total protein is not likely to be low in diets when caloric needs are met. However, the source as well as the total amount of protein is important. If animal foods supply part of the total, the protein quality of the diet is enhanced. Protein from pulses or legumes is also effective in supplementing that in grains and is especially important where animal protein is low.

Reference standards were therefore provided for animal and pulse protein as well as total protein, and the same standards were applied to all countries of the world. They include an allowance of 60 grams of total protein, retail level; a minimum allowance of 7 grams for animal protein; and enough pulse protein to bring the total animal and pulse protein to 17 grams.

The total protein reference standard is regarded as adequate and takes account of the predominance of vegetable protein in the diet of many countries. The animal protein reference standard, on the other hand, is exceptionally low and should not be regarded as a standard in the sense of representing animal protein adequacy of diets generally in the world. But the protein reference standards here applied do serve to single out those areas where total protein availabilities, especially animal protein, are low, and where therefore conditions are generally unfavorable for the survival of infants and children under 5 years and for the health of pregnant and lactating women. Animal protein levels exceeding 7 grams per person per day would be desirable in these areas not only for protein quality itself but because foods which supply it -- milk, cheese, eggs, meat, and fish -- provide other essential nutrients in which diets are likely to be low.

Reference standards for fat are expressed in terms of the amount that would provide 15 percent of the reference standard calories. This level may be considered a nutritional floor rather than a desirable goal inasmuch as "it is not yet possible to state definitely a reasonable allowance for fat in the diet," according to the National Research Council of the National Academy of Sciences.

Procedure

Production of major foodstuffs was projected for each country to 1962 and 1966. In general, trends in output of individual commodities during the 1950's served as a basis for preliminary projections. In some countries, however, abnormalities during this decade due to weather or other reasons made it necessary to view a longer period. And in many countries information was available to suggest patterns of development different from those prevailing in the past decade. Production goals set forth by foreign governments in their development plans were taken into account. Due consideration was given to availability of land and water resources, probable investments in agriculture, state of agricultural technology and likely adoption of improved practices, and other factors bearing upon the prospects for achieving production goals. The importance of availability of fertilizers and incentives for their use was recognized to be of major importance in determining future levels of output. Thus, the production projections appearing in this study reflect the judgment of country and commodity specialists in weighting the relative importance of the many factors affecting future output.

Requirements were projected for both food and nonfood uses. For the underdeveloped countries, the assumption was made that patterns of consumption would change but slowly within the short period under consideration. Exceptions were made in instances where per-capita consumption of certain

commodities in 1958 was felt to be abnormally high or low. Exceptions were also made to provide for a continuance of shifts when dietary changes appeared to be already in process. Wherever possible, account was taken of expected changes in income levels and the probable effects of such changes on patterns of consumption. Information necessary for making these allowances was, of course, most readily available for the industrialized countries. For the remainder of the world, much less precision was possible in projecting consumption levels.

In diet-deficit countries, requirements of wheat, beans and peas, non-fat dry milk, and vegetable oil were adjusted upward by amounts calculated as necessary to satisfy nutritional deficits in protein, fat, and/or calories. Where practicable, these additional requirements were translated in part into other commodities that could meet the nutritional deficits.

In the underdeveloped countries nonfood uses, consisting mainly of seed and waste, were projected on the basis of past trends. In the industrial countries, projection of nonfood uses was based on expected utilization for livestock feed and trends in seed use.

Table 21.--World population by countries, 1958 and projections for 1962 and 1966 1/

Country	Numbers			Change	
	1958	1962	1966	1958-62	1958-66
	Millions	Millions	Millions	Percent	Percent
LATIN AMERICA					
Argentina	20.2	21.8	23.6	7.9	16.8
Bolivia	3.4	3.6	3.9	6.5	15.1
Brazil	62.7	70.1	79.0	11.8	26.0
Chile	7.3	8.0	8.7	9.0	18.6
Colombia	13.5	15.0	16.7	11.1	23.7
Costa Rica	1.1	1.2	1.4	15.7	31.5
Cuba	6.5	7.1	7.8	8.3	18.8
Dominican Republic	2.8	3.2	4.5	13.2	24.3
Ecuador	4.0	4.5	5.0	11.4	22.7
El Salvador	2.4	2.8	3.1	14.0	27.6
Guatemala	3.6	4.0	4.5	13.2	27.9
Haiti	3.4	3.7	4.0	7.0	15.8
Honduras	1.8	2.1	2.3	13.1	26.8
Mexico	32.3	36.6	40.9	13.3	26.6
Nicaragua	1.4	1.6	1.8	13.8	28.3
Panama	1.0	1.1	1.2	11.6	24.6
Paraguay	1.7	1.8	1.9	7.7	14.2
Peru	10.2	11.3	12.3	10.8	20.6
Uruguay	2.7	2.9	3.1	7.4	14.0
Venezuela	6.3	7.2	8.1	13.3	27.8
Other	4.8	5.2	5.6	7.1	15.3
Total	193.1	214.8	239.4	11.1	23.3
CANADA	17.0	18.5	20.0	8.8	17.6
UNITED STATES	174.2	186.4	199.3	7.0	14.4
WESTERN EUROPE 2/					
Austria	7.0	7.2	7.3	1.7	3.3
Belgium	9.1	9.3	9.5	2.2	4.4
Denmark	4.6	4.7	4.8	2.6	5.3
Finland	4.4	4.5	4.7	3.2	6.8
France	44.8	46.2	47.2	3.0	5.2
Germany, West	54.7	56.8	58.9	3.8	7.7
Greece	8.6	8.9	9.2	3.6	7.3
Ireland	2.8	2.8	2.8	-1.1	-1.8
Italy	48.9	50.0	51.0	2.3	4.3
Netherlands	11.3	11.8	12.4	4.9	9.8
Norway	3.5	3.6	3.7	3.1	5.7
Portugal	8.3	8.5	8.8	2.5	5.7
Spain	28.9	29.8	30.8	3.2	6.6
Sweden	7.4	7.5	7.6	1.3	2.6
Switzerland	5.3	5.5	5.8	5.1	9.5
United Kingdom	51.8	52.7	53.5	1.6	3.3
Other	2.4	2.4	2.5	3.0	6.4
Total	303.8	312.2	320.5	2.8	5.5
EASTERN EUROPE 2/					
Bulgaria	7.8	8.1	8.4	4.0	7.8
Czechoslovakia	13.5	14.0	14.3	3.3	6.3
Germany, East	17.3	17.0	16.7	-1.7	-3.6
Hungary	9.9	10.2	10.5	3.2	6.2
Poland	29.0	30.9	32.3	5.0	11.0
Rumania	18.2	19.0	19.9	4.4	9.3
Soviet Union	208.8	222.6	236.4	6.6	13.2
Yugoslavia	18.3	18.8	19.7	2.7	7.6
Total	322.8	340.6	358.2	5.5	11.0

See footnotes at end of table.

Table 21.--World population by countries, 1958 and projections for 1962 and 1966 -- Continued

Country	Numbers			Change	
	1958	1962	1966	1958-62	1958-66
	:Millions	:Millions	:Millions	: Percent	: Percent
AFRICA 3/					
Algeria	10.6	11.5	12.6	8.5	18.9
Angola	4.5	4.7	4.9	4.4	8.9
Belgian Congo and Ruanda-Urundi	18.3	19.6	21.0	7.1	14.8
Cameroun	3.2	3.5	3.7	9.4	15.6
Egypt	24.8	27.4	30.3	10.5	22.2
Ethiopia	19.0	20.6	22.6	8.4	18.9
French Equatorial Africa	5.0	5.2	5.5	4.0	10.0
French West Africa, excluding Guinea	17.2	18.1	19.1	5.2	11.0
Ghana	4.8	5.1	5.4	6.2	12.5
Guinea	2.6	2.7	2.9	3.8	11.6
Kenya	6.4	6.7	7.1	4.7	10.9
Liberia	1.3	1.4	1.4	7.7	7.7
Libya	1.2	1.3	1.4	8.3	16.7
Morocco	10.4	11.3	12.4	8.7	19.2
Nigeria and British Cameroons	36.6	39.1	41.5	6.8	13.4
Rhodesia and Nyassaland, Federation of	7.8	8.6	9.5	10.3	21.8
Sudan	10.9	12.4	14.0	13.8	28.4
Tanganyika	8.9	9.5	10.0	6.7	12.4
Togo	1.1	1.2	1.3	9.1	18.2
Tunisia	4.0	4.3	4.7	7.5	17.5
Union of South Africa	14.4	15.9	17.4	10.4	20.8
Other	26.5	28.4	30.1	7.2	13.6
Total	239.5	258.5	278.8	7.9	16.4
WEST ASIA					
Iran	19.7	21.7	24.0	10.2	21.8
Iraq	6.6	7.3	8.0	10.6	21.2
Israel	2.0	2.2	2.4	10.0	20.0
Jordan	1.6	1.8	2.0	12.5	25.0
Lebanon	1.6	1.7	1.8	6.2	12.5
Syria	4.6	5.1	5.8	10.9	26.1
Turkey	26.2	29.2	32.6	11.4	24.4
Other	12.9	13.6	14.3	5.4	10.8
Total	75.2	82.6	90.9	9.8	20.9
FAR EAST					
Burma	21.3	23.2	25.5	8.9	19.7
Ceylon	9.4	10.4	11.4	10.3	21.5
India	415.9	452.2	494.2	8.7	18.8
Indonesia	87.3	94.6	102.5	8.4	17.4
Japan	91.7	94.8	97.2	3.4	6.0
Korea, South	22.8	25.0	27.8	9.6	21.9
Malaya	6.5	7.4	8.3	12.7	27.6
Pakistan	88.6	96.1	104.4	8.5	17.8
Philippines	25.4	28.9	32.9	13.8	29.5
Taiwan	10.5	11.9	13.4	13.3	27.6
Thailand	24.2	27.0	30.1	11.6	24.4
Other	51.1	55.2	59.9	8.0	17.2
Total	854.7	926.7	1,007.6	8.4	17.9
COMMUNIST ASIA					
	675.0	725.0	786.0	7.4	16.4
OCEANIA 2/					
Australia	10.0	10.8	11.6	8.0	16.0
New Zealand	2.3	2.5	2.7	6.0	15.0
Other	3.0	3.3	3.6	10.0	20.0
Total	15.3	16.6	17.9	8.5	17.0
World Total	2,870.6	3,081.9	3,318.6	7.4	15.6

1/ Economic Research Service estimates based upon United Nations and other sources. 2/ End of year. 3/ Names and frontiers as they generally existed in 1958.

Table 22.--Food consumption levels per person per day, in terms of calorie, protein, and fat content, by country, 1958

Country	:Calories:	Protein				Fat
		Animal	Pulse	Other	Total	
	Number	Grams	Grams	Grams	Grams	Grams
LATIN AMERICA						
Argentina	3,360	62	1	37	100	121
Bolivia	1,880	14	4	32	50	28
Brazil	2,815	20	14	30	64	56
Chile	2,610	27	6	38	71	61
Colombia	2,225	20	3	28	51	43
Costa Rica	2,555	23	8	28	59	61
Cuba	2,870	28	9	31	68	69
Dominican Republic	1,950	12	5	20	37	45
Ecuador	1,935	10	7	28	45	32
El Salvador	1,975	12	13	32	57	38
Guatemala	2,175	9	9	37	55	38
Haiti	1,875	4	13	25	42	22
Honduras	2,190	9	8	41	58	33
Mexico	2,725	18	10	41	69	59
Nicaragua	1,985	18	5	27	50	38
Panama	2,370	19	6	32	57	51
Paraguay	2,335	35	7	28	70	60
Peru	2,040	13	6	33	52	34
Uruguay	2,945	59	1	50	110	118
Venezuela	2,255	18	9	29	56	48
CANADA	3,080	62	2	30	94	138
UNITED STATES	3,220	66	5	26	97	149
WESTERN EUROPE						
Austria	3,010	41	1	33	75	109
Belgium	2,890	42	1	33	76	112
Denmark	3,255	55	1	32	88	139
Finland	3,110	46	1	37	84	115
France	3,015	48	2	37	87	108
Germany, West	2,935	42	1	31	74	124
Greece	2,600	22	6	47	75	73
Ireland	3,375	46	1	42	89	112
Italy	2,755	27	5	46	78	73
Netherlands	2,895	43	1	28	72	119
Norway	3,180	43	1	33	77	131
Portugal	2,485	20	5	40	65	72
Spain	2,565	23	7	42	72	79
Sweden	2,935	50	1	26	77	124
Switzerland	3,040	50	1	31	82	110
United Kingdom	3,200	56	2	27	85	128
EASTERN EUROPE						
Bulgaria	2,780	20	6	63	89	61
Czechoslovakia	3,010	26	1	41	68	95
Germany, East	2,950	35	1	36	72	112
Hungary	2,925	26	3	42	71	85
Poland	3,100	35	1	43	79	97
Rumania	2,790	18	3	51	72	57
Soviet Union	2,985	26	3	63	92	70
Yugoslavia	2,770	24	5	59	88	60

Table 22.--Food consumption levels per person per day, in terms of calorie, protein, and fat content, by country, 1958 -- Continued

Country	Calories	Protein				Fat
		Animal	Pulse	Other	Total	
	Number	Grams	Grams	Grams	Grams	Grams
AFRICA 1/						
Algeria	2,230	15	5	39	59	28
Angola	2,215	8	17	31	56	44
Belgian Congo and Ruanda-Urundi	2,650	7	15	27	49	37
Cameroun	2,470	5	7	39	51	51
Egypt	2,340	7	12	51	70	45
Ethiopia	2,295	16	18	42	76	48
French Equatorial Africa	2,575	7	10	39	56	62
French West Africa, excluding Guinea	2,450	5	8	46	59	27
Ghana	2,605	9	5	37	51	52
Guinea	2,400	4	10	33	47	60
Kenya	2,240	13	6	45	64	37
Liberia	2,540	3	3	36	42	55
Libya	2,180	8	7	41	56	38
Morocco	2,480	17	1	54	72	30
Nigeria and British Cameroons	2,680	6	9	45	60	49
Rhodesia and Nyasaland, Federation of	2,500	12	13	51	76	46
Sudan	2,295	16	9	41	66	51
Tanganyika	2,175	9	14	41	64	26
Togo	2,645	4	10	34	48	65
Tunisia	2,170	15	4	48	67	27
Union of South Africa	2,620	24	3	47	74	73
WEST ASIA						
Iran	2,040	13	4	45	62	30
Iraq	2,255	15	7	52	74	38
Israel	2,715	30	3	46	79	76
Jordan	2,085	8	10	45	63	37
Lebanon	2,415	14	3	55	72	46
Syria	2,255	11	4	50	65	40
Turkey	2,650	12	6	66	84	45
FAR EAST						
Burma	2,150	10	7	34	51	26
Ceylon	2,060	8	4	34	46	59
India	2,050	6	15	36	57	34
Indonesia	2,125	4	10	34	48	38
Japan	2,310	13	11	42	66	23
Korea, South	2,040	11	10	39	60	19
Malaya	2,290	11	5	35	51	40
Pakistan	2,030	10	8	36	54	20
Philippines	2,145	15	4	37	56	39
Taiwan	2,340	12	12	36	60	37
Thailand	2,185	12	4	29	45	35
COMMUNIST ASIA	2,200	6	15	44	65	32
OCEANIA	3,210	67	5	31	103	136

1/ Names and frontiers as they generally existed in 1958.

Table 23.---Indices of world agricultural production: Total and per capita, by region, average 1935-39 and annual 1958-59 to 1960-61 ^{1/}

(Average 1952-53 to 1954-55 = 100)

Region or country	Total production			Per capita production		
	Average: 1935-39:1958-59:1959-60 ^{2/} :1960-61 ^{3/} percent change 1935-39:1952-54 to 1960-61:1960-61			Average: 1935-39:1958-59:1959-60 ^{2/} :1960-61 ^{3/} percent change 1935-39:1952-54 to 1960-61:1960-61		
	- - Percent - -			- - Percent - -		
Southern Area						
Latin America	72	121	123	124		
Africa and West Asia	77	117	118	121		
Far East, less Japan ^{4/}	89	114	119	119		
Communist Asia	96	120	115	117		
Total	85	118	118	120		
Northern Area						
Western Europe	81	110	112	115		
Eastern Europe ^{5/}	108	132	130	131		
United States and Canada	69	113	114	117		
Japan	83	132	140	145		
Australia and New Zealand	76	120	121	124		
Total	84	118	119	122		
World total	85	118	119	121		

1/ Value of production at constant prices. Revised. Crops included in the index are harvested mainly between July 1 of the first year shown and June of the following year. For a few crops and most livestock production, estimates are for the calendar year of the first year shown.

2/ Preliminary.

3/ Estimated.

4/ Includes Pacific Islands.

5/ Includes Soviet Union.

Table 24.--Fertilizer: Total production and comparison with population and arable land, world by regions, 1958

Region	Population ^{1/}	Arable land ^{2/}		Fertilizer production ^{2/}											
		Total ^{3/}	Per capita	N	P ₂ O ₅	K ₂ O	Total	Per capita	Kg.	Per hectare	Percent of world total				
		Mil. ha.	Hectares												
<u>Southern Area</u>															
Latin America	193.1	102	0.5	249	104	20	373	1.9	3.7	1.4					
Africa and West Asia	314.7	290	0.9	75	283	71	429	1.4	1.5	1.6					
Far East, less Japan ^{4/}	766.0	257	0.3	140	65	1	206	0.3	0.8	0.8					
Communist Asia ^{5/}	675.0	112	0.2	180	62	0	242	0.4	2.2	0.9					
Total	1,948.8	761	0.4	644	514	92	1,250	0.6	1.6	4.7					
<u>Northern Area</u>															
Western Europe	303.8	97	0.3	3,718	3,598	3,410	10,726	35.3	110.5	39.8					
Eastern Europe ^{6/}	322.8	277	0.9	1,530	1,362	2,560	5,452	16.9	19.7	20.2					
United States and Canada	191.2	229	1.2	2,671	2,646	2,107	7,424	38.8	32.4	27.6					
Japan	91.7	6	0.1	986	416	0	1,402	15.3	229.9	5.2					
Australia and New Zealand	12.3	28	2.2	29	646	0	675	54.9	24.5	2.5					
Total	921.8	637	0.7	8,934	8,668	3,077	25,679	27.9	40.3	95.3					
World total	2,870.6	1,398	0.5	9,578	9,182	8,169	26,929	9.4	19.3	100.0					

^{1/} Economic Research Service estimates based upon United Nations and other sources.^{2/} Arable land and land under tree crops. This does not include permanent meadows or pastures.^{3/} FAO Production Yearbook 1960, Volume 14.^{4/} Includes Pacific Islands.^{5/} From unpublished Economic Research Service estimates.^{6/} Includes Soviet Union.

Table 25.--Selected commodities: Estimated consumption, production, and import need or export availability, world by regions, 1958 and projected to 1962 and 1966

Commodity and region 1/	1958 2/			1962 3/			1966 4/		
	Estimated consumption	Production	Import need or export availability (-)	Estimated consumption	Production	Import need or export availability (-)	Estimated consumption	Production	Import need or export availability (-)
Rice									
Western Hemisphere	5.6	6.1	-	6.4	7.4	- 1.0	7.0	8.0	- 1.0
Africa and West Asia	3.7	3.5		4.5	4.2	.3	4.8	4.8	0
Far East, Communist Asia, and Oceania	132.2	136.6		144.0	142.3	1.7	156.1	154.2	1.9
Western Europe	1.1	.9		1.2	1.0	.2	1.3	1.0	.3
Eastern Europe	1.0	.3		.9	.2	.7	1.0	.3	.7
World total	143.6	147.4		157.0	155.1	1.9	170.2	168.3	1.9
Coarse grains									
Western Hemisphere	146.1	169.1	- 6.4	155.3	161.7	- 6.4	168.8	177.6	- 8.8
Africa and West Asia	37.6	40.4		40.8	43.7	- 2.9	44.7	48.3	- 3.6
Far East, Communist Asia, and Oceania	94.4	93.2		101.4	95.0	6.4	111.0	101.2	9.8
Western Europe	59.2	46.3		66.9	51.2	15.7	73.7	56.2	17.5
Eastern Europe	85.4	86.2		91.4	91.4	0	97.2	97.5	- .3
World total 5/	422.7	435.2	12.8	455.8	443.0		495.4	480.8	14.6
Cotton 6/									
Western Hemisphere	12.0	19.6	- 8.4	12.2	20.6	- 8.4	13.7	23.6	- 9.9
Africa and West Asia	1.6	5.9		1.8	6.4	- 4.6	2.0	7.2	- 5.2
Far East, Communist Asia, and Oceania	18.4	13.2		19.3	14.4	4.9	20.7	15.3	5.4
Western Europe	7.4	.6		7.9	.7	7.2	8.4	.8	7.6
Eastern Europe	8.5	7.4		9.2	7.3	1.9	10.1	7.6	2.5
World total	47.9	46.7	1.0	50.4	49.4		54.9	54.5	.4
Tobacco 7/									
Western Hemisphere	2.1	2.7	- .5	2.3	3.1	- .5	2.7	3.5	- .5
Africa and West Asia	.4	.8		.4	.9	- .4	.5	1.0	- .4
Far East, Communist Asia, and Oceania	3.0	3.4		3.3	3.9	- .2	3.7	4.4	- .2
Western Europe	1.3	.6		1.4	.5	.9	1.5	.6	1.0
Eastern Europe	1.1	1.1		1.1	1.1	.1	1.2	1.1	.2
World total	7.9	8.6	- .1	8.5	9.5		9.6	10.6	.1

1/ Rice and coarse grains are shown because of their major importance in many diets and their use as a wheat substitute even though nutritional deficits were not expressed in terms of these commodities. Cotton and tobacco are included because of their importance in world trade. 2/ Cotton data for 1959-60 cotton year. Tobacco data for 1959 calendar year. 3/ Cotton data for 1962-63 cotton year. 4/ Cotton data for 1966-67 cotton year. 5/ Projections include probable large drawdown of stocks in 1962 and 1966, principally in the Western Hemisphere, and a large deficit in Communist Asia, much of which will probably not be filled by imports. 6/ Data in 1,000 bales. 7/ Data in million pounds. Consumption on dry unstemmed weight basis. Production on farm sales weight basis.



